

WILEY FINANCE

# Beyond the J curve

*Managing a  
Portfolio of Venture  
Capital and Private  
Equity Funds*

THOMAS MEYER  
PIERRE-YVES MATHONET

# Beyond the J-curve

Managing a Portfolio of Venture Capital and  
Private Equity Funds

**Thomas Meyer & Pierre-Yves Mathonet**



John Wiley & Sons, Ltd



This is the first work that I have seen that comprehensively covers the important subject of valuing, evaluating and measuring the performance of private equity funds. Much has been published in journals and papers on individual aspects of this controversial subject by various segments of the stakeholder universe – usually putting forward partisan viewpoints. This is the first time that a holistic, integrated and disciplined framework has been adopted. The approach taken has yielded a rich crop of useful results including an innovative methodology for determining fair value for private equity funds during the course of their long lives; portfolio design and benchmarking methods; a prototype grading and fund scoring system. Essential reading for investors and a useful state-of-the-art reference manual for private equity managers.

**Christopher K.B. Brothie, Formerly Chief Executive of the Baring Private Equity Group and Member of the ING Management Council**

This book goes a long way to filling the vacuum of digestible thought and writing about private equity fund investing. It provides structure and rigour to all aspects of the investment process and will be an invaluable reference for the limited partner community. But more than anything else, it provides a platform on which to build greater understanding as the asset class evolves and the role of fund investors becomes more demanding.

**Chris Davison, Associate Director, Almeida Capital**

The transactions, size and stories of private equity and venture capital investment activity are the focus of many news publications today. It is not quite the same situation in the area of academic and technical publications, where much remains to be researched and published. The authors of *Beyond the J Curve* have taken on the ambitious project of analysing the difficult and controversial area of valuing fund portfolios. Their innovative and integrated approach aims at opening up the framework within which these valuations are practised by investors, and offers alternatives. This is a welcome angle to the current debate among investors, private equity and venture capital practitioners. The subject is likely to spur substantial discussions and additional technical publications. *Beyond the J Curve* is certainly a thorough and pioneering contribution to that debate.

**Javier Echarri, Secretary General, European Private Equity & Venture Capital Association**

Congratulations to both Thomas Meyer and Pierre-Yves Mathonet for their publication *Beyond the J curve*. They should be highly commended for breaking a long-standing taboo – investing in private equity can now be modelled. *Beyond the J curve* not only reveals a theoretical approach to Fair Value for private equity funds but also proposes a complete approach for investors to build up a comprehensive and effective programme for private equity investments. I am personally convinced that our industry should become more involved with this type of approach in order to best explain the interest of investing in private equity.

**Pierre Hervé, General Secretary of Natexis private Equity, Chairman of AFIC's Basel II and IFRS working groups, and Member of EFRAG's Venture Capital working group**

*Beyond the J Curve* is a timely guide for investors in private equity, with an elegant balance of analysis and practical suggestions. Its emphasis on monitoring and active portfolio management should promote more effective stewardship of private equity assets in the future.  
**Brenlen Jinkens, Director, Cogent Partners Europe**

Much has been written about how to become an entrepreneur or how to invest in companies if you are a venture or private equity investor. What has been sorely missing is any advice on how to examine private equity from the institutional investor point of view. *Beyond the J Curve* is right on target, giving the private equity investment manager much needed guidance on how to put private equity into a modern diversified investment portfolio. As both a primer and an advanced guide, offering both theory and practice – this book provides practical and comprehensive education and advice on traversing the often murky and risky waters of venture and private equity investing. From primary due diligence to portfolio monitoring, it provides a thorough and advanced introduction to private equity investing for the portfolio investor. It should become a 'must-have' reference for any current or prospective private equity investor.

**Jesse E. Reyes, Managing Director, Reyes Analytics**

Over the past 20 years private equity has become an important feature of the investment landscape and it is now an asset class that few institutional investors can ignore. Although private equity has attracted much interest over recent years, there have been very few authoritative studies that analyse the key components in creating and managing a portfolio of private equity investments. Thomas Meyer and Pierre-Yves Mathonet have applied intellectual rigour in their examination of the issues that fund managers confront when taking on this esoteric asset class. In principle it appears straightforward to hire managers to invest in private equity opportunities. However, nothing is further from the truth and *Beyond the J Curve* is an ideal companion to fund managers trying to navigate the swells and eddies of private equity investment.

**Ray Maxwell, General Partner, INVESCO Private Capital**

*Beyond the J Curve* is the first book that gives a comprehensive explanation of the management of a diversified private equity portfolio. In this groundbreaking book, Meyer and Mathonet provide both the theoretical underpinnings for, and practical realities of, building a successful portfolio of private equity investments. In today's increasingly complex environment, this book is an invaluable resource for any institutional investor who is constructing or managing a portfolio of investments in private equity and/or venture capital.

**Mark D. Wiseman, Chairman, Institutional Limited Partners Association (ILPA)**

# Beyond the J-curve

Managing a Portfolio of Venture Capital and  
Private Equity Funds

**Thomas Meyer & Pierre-Yves Mathonet**



John Wiley & Sons, Ltd

Copyright © 2005      John Wiley & Sons Ltd, The Atrium, Southern Gate, Chichester,  
West Sussex PO19 8SQ, England

Telephone    (+44) 1243 779777

Email (for orders and customer service enquiries): [cs-books@wiley.co.uk](mailto:cs-books@wiley.co.uk)

Visit our Home Page on [www.wiley.com](http://www.wiley.com)

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, except under the terms of the Copyright, Designs and Patents Act 1988 or under the terms of a licence issued by the Copyright Licensing Agency Ltd, 90 Tottenham Court Road, London W1T 4LP, UK, without the permission in writing of the Publisher. Requests to the Publisher should be addressed to the Permissions Department, John Wiley and Sons Ltd, The Atrium, Southern Gate, Chichester, West Sussex PO19 8SQ, England, or emailed to [permreq@wiley.co.uk](mailto:permreq@wiley.co.uk), or faxed to (+44) 1243 770620.

Designations used by companies to distinguish their products are often claimed as trademarks. All brand names and product names used in this book are trade names, service marks, trademarks or registered trademarks of their respective owners. The Publisher is not associated with any product or vendor mentioned in this book.

This publication is designed to provide accurate and authoritative information in regard to the subject matter covered. It is sold on the understanding that the Publisher is not engaged in rendering professional services. If professional advice or other expert assistance is required, the services of a competent professional should be sought.

#### ***Other Wiley Editorial Offices***

John Wiley & Sons, Inc., 111 River Street, Hoboken, NJ 07030, USA

Jossey-Bass, 989 Market Street, San Francisco, CA 94103-1741, USA

Wiley-VCH Verlag GmbH, Boschstr. 12, D-69469 Weinheim, Germany

John Wiley & Sons Australia Ltd, 42 McDougall Street, Milton, Queensland 4064, Australia

John Wiley & Sons (Asia) Pte Ltd, 2 Clementi Loop #02-01, Jin Xing Distripark, Singapore 129809

John Wiley & Sons Canada Ltd, 22 Worcester Road, Etobicoke, Ontario, Canada M9W 1L1

Wiley also publishes its books in a variety of electronic formats. Some content that appears in print may not be available in electronic books.

#### ***British Library Cataloging in Publication Data***

A catalogue record for this book is available from the British Library

ISBN-10 0-470-01198-X (HB)

ISBN-13 978-0-470-01198-0 (HB)

Typeset in 10/12pt Times by Integra Software Services Pvt. Ltd, Pondicherry, India

Printed and bound in Great Britain by Antony Rowe Ltd, Chippenham, Wiltshire

This book is printed on acid-free paper responsibly manufactured from sustainable forestry in which at least two trees are planted for each one used for paper production.

**T.M.**

To my family, to finally explain what I have been doing all day, and most of all to Mika Kaneyuki, my wife and best friend, who is my strength and purpose in life.

**P.-Y.M.**

To my wife Barbara, my very first supporter and *raison d'être*, who accepted being single many evenings and weekends because of this book, to my son John, who made me the happiest dad, and to my family and friends. I have in me something of you all and therefore, this book is also yours.



For other titles in the Wiley Finance series  
please see [www.wiley.com/finance](http://www.wiley.com/finance)

# Contents

<b>List of Boxes</b>	<b>xv</b>
<b>Acknowledgements</b>	<b>xvii</b>
<b>Disclaimer</b>	<b>xviii</b>
<b>PART I PRIVATE EQUITY ENVIRONMENT</b>	<b>1</b>
<b>1 Introduction</b>	<b>3</b>
1.1 Routes into private equity	3
1.2 The limited partner's viewpoint	4
1.3 The challenge of venture capital fund valuation	4
1.4 Hard figures or gut instinct?	5
1.5 Managing with fuzzy figures	5
1.6 Making the grades	5
1.7 Outline	7
<b>2 Private Equity Market</b>	<b>9</b>
2.1 Funds as intermediaries	10
2.2 The problem of predicting success	15
2.2.1 Can success be repeated?	15
2.2.2 What is success?	17
2.2.3 Tolerance for failure	18
2.3 Broad segmentation of investment universe	18
2.3.1 Institutional quality funds	18
2.3.2 Newcomers	21
2.4 Private equity market dynamics	22
2.4.1 Boom-and-bust cycles	22
2.4.2 The relationship between limited and general partners	23
2.4.3 Life cycle of limited and general partner relationship	24
2.5 Conclusion	26

---

<b>3 Private Equity Fund Structure</b>	<b>27</b>
3.1 Key features	29
3.1.1 Corporate governance	30
3.1.2 Investment objectives, fund term and fund size	31
3.1.3 Management fees and expenses	31
3.1.4 Carried interest	32
3.1.5 Preferred return or hurdle rate	33
3.1.6 General partners' contribution	34
3.1.7 Key person provision	35
3.1.8 Termination and divorce	36
3.1.9 Distribution waterfall	37
3.2 Conflicts of interest	38
3.3 Finding the balance	38
<b>4 Buyout and Venture Capital Fund Differences</b>	<b>41</b>
4.1 Valuation	43
4.2 Business model	44
4.3 Deal structuring	45
4.4 Role of general partners	45
<b>5 Funds-of-funds</b>	<b>47</b>
5.1 Structure	47
5.2 Value added	48
5.2.1 Diversification	49
5.2.2 Resources	49
5.2.3 Selection skills	50
5.2.4 Incentives	50
5.3 Costs	51
5.4 Private equity investment programme	52
5.4.1 Funding	53
5.4.2 Management fees and profit sharing	53
5.4.3 Investment activities	54
Appendix 5A	54
<b>PART II INVESTMENT PROCESS</b>	<b>57</b>
<b>6 Investment Process</b>	<b>59</b>
6.1 Key performance drivers	59
6.1.1 Fund manager selection	60
6.1.2 Management of diversification	60
6.1.3 Commitment management	60
6.2 Process description	61
6.2.1 Portfolio objectives	61
6.2.2 Portfolio design	62
6.2.3 Liquidity management and valuation	63
6.2.4 Monitoring	64
6.2.5 Action and implementation	64

6.3	Risk management	65
6.3.1	Risk-measurement framework	65
6.3.2	Risk control	65
6.3.3	Risk mitigation	67
6.4	Tackling uncertainty	68
6.4.1	Reducing uncertainty	69
6.4.2	Strategies under uncertainty	69
<b>7</b>	<b>Risk Framework</b>	<b>73</b>
7.1	Market value	75
7.2	Market or credit risk?	77
7.2.1	Market risk	77
7.2.2	Credit risk	77
7.3	Conclusion	78
	Appendix 7A: Incorporating private equity into the traditional VaR framework	79
7A.1	VaR calculation based on reported financial data	79
7A.2	Marking-to-model	80
<b>8</b>	<b>Portfolio Design</b>	<b>81</b>
8.1	Portfolio design framework	81
8.1.1	Modern portfolio theory	81
8.1.2	“Naïve” allocation	83
8.2	Portfolio construction techniques	83
8.2.1	Bottom-up approach	84
8.2.2	Top-down approach	84
8.2.3	Mixed approach	85
8.2.4	Portfolio monitoring	87
8.3	Risk–return management approaches	88
8.3.1	Core–satellite approach	88
8.3.2	Diversification	90
<b>9</b>	<b>Case Study</b>	<b>95</b>
9.1	Looking for the optimal programme size	95
9.1.1	Data	96
9.1.2	The model	97
9.1.3	Results	98
9.1.4	Extension	100
9.1.5	Conclusion	102
9.2	Overcoming entry barriers: long-term strategies	104
9.2.1	Data	104
9.2.2	Modelling	105
9.2.3	Results	106
9.2.4	Conclusion	106
	Appendix 9A: Formulae	111
	Appendix 9B: Skewness and kurtosis	112
	Appendix 9C: Expected utility	113

<b>10</b>	<b>The Management of Liquidity</b>	<b>115</b>
10.1	Liquidity management problem	115
10.1.1	Modelling	117
10.1.2	Impact of liquidity returns	118
10.1.3	Over-commitments	119
10.1.4	Conclusion	122
10.2	Liquidity management approaches	123
10.2.1	Sources of liquidity	123
10.2.2	Foreign exchange risk	124
10.2.3	Distributions-in-kind	128
10.2.4	Consequences for performance measurement	130
10.3	Investment strategies for undrawn capital	130
10.3.1	Publicly quoted private equity	131
10.3.2	Other alternative assets	132
10.4	Cash flow projections	133
10.4.1	Estimates	135
10.4.2	Forecasting	138
10.4.3	Scenarios	142
10.4.4	Control framework	144
10.5	Conclusion	145
	Appendix 10A: Cash flow estimation technique	145
	10A.1 Cash flow estimate—example 1	145
	10A.2 Cash flow estimate—example 2	145
	10A.3 Cash flow estimate—example 3	146
	Appendix 10B: Cumulative net cash flow statistics	147
	Appendix 10C: Liquidity management tests	147
	10C.1 Main tests	148
	10C.2 Liquidity tests	148
	10C.3 Performance tests	149
	10C.4 Matching tests	149
	10C.5 Scenario validity tests	149
<b>PART III</b>	<b>DESIGN TOOLS</b>	<b>151</b>
<b>11</b>	<b>Established Approaches to Fund Valuation</b>	<b>153</b>
11.1	Bottom-up approach to private equity fund valuation	154
11.2	Inconsistency of valuations	157
11.3	NAVs do not tell the full picture	157
11.4	Portfolio companies cannot be valued in isolation	159
11.5	Conclusion	162
<b>12</b>	<b>Benchmarking</b>	<b>165</b>
12.1	Specific issues	165
12.2	Individual funds	166
12.2.1	Performance measures	166
12.2.2	Classical relative benchmarks	167

12.2.3	Other relative benchmarks	169
12.2.4	Absolute benchmarks	169
12.3	Portfolio of funds	170
12.3.1	Performance measures	170
12.3.2	Benchmarks	171
<b>13</b>	<b>A Prototype Internal Grading System</b>	<b>173</b>
13.1	Grading of private equity funds	173
13.2	The NAV is not enough	174
13.3	Existing approaches	176
13.3.1	Fund rating by external agencies	176
13.3.2	Internal VC fund assessment approaches	178
13.3.3	Comparison of approaches	180
13.4	New approach to internal fund-grading system	180
13.4.1	Grading formalisation	180
13.4.2	Expected performance grades	181
13.5	Summary—NAV- and grading-based valuation	188
13.6	Conclusion	189
	Appendix 13A	189
<b>14</b>	<b>Fund Manager Selection Process</b>	<b>193</b>
14.1	Relevance of fund manager selection	193
14.2	Why due diligence?	194
14.2.1	Due diligence as a requirement for prudent investors	194
14.2.2	Due diligence as a basis for better investment decisions	195
14.3	The due diligence process	195
14.3.1	Limitations	195
14.3.2	Due diligence questionnaires	196
14.4	Fund manager selection process	197
14.4.1	Determination of the “wish list”	197
14.4.2	Deal sourcing	198
14.4.3	Screening	198
14.4.4	Meet the team	198
14.4.5	Evaluation	199
14.4.6	In-depth due diligence	200
14.5	Decision and commitment	201
	Appendix 14A: Illustrative due diligence questionnaire—venture capital funds	202
<b>15</b>	<b>Qualitative Fund Scoring</b>	<b>219</b>
15.1	Scoring approach	219
15.2	Scoring dimensions	221
15.2.1	Management team skills	221
15.2.2	Management team stability	224
15.2.3	Management team motivation	225
15.2.4	Fund strategy	227
15.2.5	Fund structure	229

---

15.2.6	External validation	230
15.2.7	Overall fit	231
<b>16</b>	<b>Grading-based Economic Model</b>	<b>233</b>
16.1	Approach	233
16.2	Internal age adjustment	237
16.3	Private equity fund IRR projections	238
16.4	Expected portfolio returns	239
16.5	Discussion	241
16.5.1	Verification of approach	241
16.5.2	Reliance on assumptions	242
16.6	Conclusion	242
	Appendix 16A	242
16A.1	Identifying bottom funds	243
16A.2	Identifying top funds	243
	Appendix 16B	245
	Appendix 16C: Grading-based private equity fund valuation—how fair is my valuation?	248
16C.1	The revised IAS 39	248
16C.2	Valuation model (mark-to-model)	251
<b>17</b>	<b>Private Equity Fund Discount Rate</b>	<b>253</b>
17.1	The capital asset pricing model	253
17.1.1	Risk-free rate	254
17.1.2	Equity risk premium	254
17.1.3	Beta	256
17.2	Private equity fund betas	257
17.2.1	Estimation based on quoted comparable	257
17.2.2	Alternatives to the “standard” regression betas	261
17.3	The alternatives to the capital asset pricing model	264
17.3.1	The opportunity cost of capital	265
17.3.2	The historical performance	265
17.4	Summary and conclusion	266
	<b>PART IV MANAGEMENT TOOLS</b>	<b>269</b>
<b>18</b>	<b>Monitoring</b>	<b>271</b>
18.1	Approach to monitoring	272
18.1.1	Monitoring as part of a control system	272
18.1.2	The trade-offs	273
18.2	The monitoring objectives	273
18.2.1	Protecting downside	274
18.2.2	Creating value	276
18.3	Information gathering	276
18.3.1	Standard monitoring	279
18.3.2	Specific monitoring	281
18.4	Evaluation	282
18.5	Actions	285

<b>19 Case Study: Saving Your Investments—Approaches to Restructuring</b>	<b>287</b>
19.1 The valley of tears	288
19.2 The report to the board	289
19.3 The terms of the restructuring	291
19.4 Epilogue	293
Appendix 19A: Investment proposal	293
Appendix 19B: Track record	294
19B.1 Greenlight 1	294
19B.2 Greenlight buyout	295
<b>20 Secondary Transactions</b>	<b>297</b>
20.1 Sellers and their motivations	297
20.2 Buyers and their motivations	299
20.3 Secondary market prices	300
20.3.1 Factors for valuation	303
20.3.2 Top-down analysis	304
20.3.3 Bottom-up analysis	306
20.3.4 Comparables	307
20.4 Transactional issues	307
20.5 The fund manager perspective	308
<b>PART V EMBRACING UNCERTAINTY</b>	<b>311</b>
<b>21 Deviating from Top Funds</b>	<b>313</b>
21.1 Strategic investments	313
21.2 Policy objectives	314
<b>22 Real Options</b>	<b>319</b>
22.1 Real options in private equity	319
22.2 Real option analysis	321
22.3 An expanded strategy and decision framework	322
22.3.1 Decision framework	322
22.3.2 Strategy framework	322
Appendix 22A: A real option example	324
<b>23 Beyond the J-curve</b>	<b>327</b>
23.1 Some do it better	327
23.2 Deadly sins	327
23.3 Structure instead of “gut instinct”	328
23.4 Patience is a virtue	328
23.5 Turning water into wine	329
<b>Glossary</b>	<b>331</b>
<b>Bibliography</b>	<b>341</b>
<b>Abbreviations</b>	<b>351</b>
<b>Index</b>	<b>353</b>





## List of Boxes

1.1	Private equity as winemaking	6
2.1	Is private equity an asset class?	9
2.2	The J curve	12
2.3	Access to top funds	19
3.1	Well-intentioned structures can have unpredictable consequences	38
6.1	Risk-adjusted pricing	65
6.2	Risk and uncertainty	68
7.1	Independent risk management function	73
8.1	Niche strategies	89
8.2	Market timing	91
9.1	Random pick	105
10.1	Emerging markets currency issues	126
11.1	Transactions before maturity	155
11.2	Venture capital as appraised asset class	160
16.1	Superior selection skills	234
18.1	Style drift	274
18.2	Transparency	277
18.3	Standard reporting	280
20.1	Secondaries as benchmark for “verifiable fair value”?	301
20.2	Securitisation: an alternative exit route	309
21.1	Cornerstoning	314



## Acknowledgements

This book was written with the help of many individuals who have given invaluable assistance. We would like to express our gratitude to all of them and notably to:

- Gauthier Monjanel & Gabriel Robet for their hard work on the case studies in this book.
- Francis Carpenter, Chief Executive, European Investment Fund, who made this project possible and provided us great support. Also all our colleagues and especially Maria Leander for her "legal" advice, Sven Lahann for testing and implementing most of our concepts, and Jacques Lilli and Bruno Robino for their comments on the due diligence questionnaire.
- Juan Delgado-Moreira PhD, CFA, Baring Private Equity Partners, and Dr Michael Jean Gschrei of Dr Gschrei & Associates GmbH for their valuable comment and suggestions on the management of liquidity.
- Brenlen Jinkens, Director and Todd Konkel, Vice President, Cogent Partners, for having shared with us their expertise on secondary transactions.
- Chris Davison, Associate Director, Almeida Capital, for his initial help and encouragement and for taking the time to read chapters of the book and provide very useful comments.
- Dr. Didier Guennoc, Research Director, EVCA, for his longstanding support and collaboration.
- London Business School (LBS), for providing us with our financial background and for bringing us together. Also to Associate Professor Alexander Ljungqvist, NYU Stern School of Business (previously Visiting Assistant Professor LBS) for his unforgettable class on entrepreneurial finance and to Professor Eli Talmor, LBS, for his insights on discount rates.
- Daniel and Florence Cathiard for producing an amazing wine and for having helped us in drawing the analogy between winemaking and private equity.

Finally, to the team at John Wiley & Sons who helped us produce the book, including our Publishing Editor, Rachael Wilkie; Project Editor, Vivienne Wickham; Marketing Executive, Peter Baker, and Assistant Editor, Chris Swain.

## Disclaimer

This book is targeting commercially-oriented institutions that are either already managing or considering setting up a private equity funds investment programme. Rather than proposing an “ideal” programme, it is our intention to discuss various methods and trade-offs. In this context, we have researched private equity market practices and discussed different approaches with industry practitioners.

Various concepts presented herein have been researched and developed in the course of our work with the European Investment Fund. Statements herein are, however, not made on behalf of the European Investment Fund or any of its representatives and nothing herein may be deemed to represent a policy or business practice of the European Investment Fund.

**Part I**

**Private Equity Environment**



# Introduction

David Rubenstein, co-founder of the Carlyle Group, has been said to compare private equity with sex. According to him, if one tries out either one with reasonable expectations, one should be pleased with the results. To quote the Yale endowment 2002 annual report, private equity *“offers extremely attractive long-term risk-adjusted return characteristics, stemming from the University’s strong stable of value-added managers that exploit market inefficiencies”*. Certainly many potential investors will find annualised private equity returns of 29% to the Yale University’s endowment, since the inception of their programme in 1973 until 2003 as a “sexy” opportunity.

Unfortunately, such return expectations may often be juvenile and slightly exaggerated. One will be definitely disappointed if quick results are expected. As Raschle & Ender (2004) observed, the *“overall private equity market has historically not delivered the often mentioned ‘guaranteed’ top return. Since the early 1980s the market size has developed approximately in line with the required return for private equity, which is basically the public market return plus an illiquidity premium”*. Private equity is largely illiquid. Either you decide to make a long-term commitment and follow a systematic approach or you had better stay out entirely. Industry practitioners believe that investing consistently and continuously probably works best, while trying to time the market and getting in and out will lead to frustration. Indeed, it is only through a methodical approach and with a disciplined implementation over a significant time period, that the results can become highly rewarding.

## 1.1 ROUTES INTO PRIVATE EQUITY

There are different routes for investing in private equity. We believe that few institutions have the experience and especially the incentive structures that would allow them to invest directly in unquoted companies, and therefore most of them seek intermediation through the limited partnership structure that, according to Bosut (2003), *“is the most ideal financial fund management structure avoiding possible conflicts of interest between the fund managers and limited partners, and aligning the incentives of the parties with each other”*. For institutions the most relevant approaches to investing in private equity are, for example, through fund-of-funds specialists as intermediaries or through similarly structured dedicated in-house private equity investment programmes. Other routes are via the publicly quoted private equity vehicles, or to open a dedicated account managed by a private equity specialist, which is similar to the fund-of-funds route but without the pooling of interests.



## 1.2 THE LIMITED PARTNER'S VIEWPOINT

While start-ups and entrepreneurs and occasionally their financiers catch the limelight, the “financiers of the financiers”, i.e. the limited partners, are generally overlooked. Most institutions themselves believe that this kind of investing is “just like any other asset” and do not pay too much attention to this—typically immaterial—part of their activities. Our book is about the portfolio management of investments in private equity funds and focuses on the limited partner’s investment process, as so far few publications address their needs. We use the expression “private equity funds investment programme” and for simplification will not differentiate between institutions’ in-house investment programmes and accounts managed by specialists on behalf of such institutions. Generally, intermediation in this asset class is continuously evolving and even an in-depth discussion of the current industry landscape goes far beyond the scope of this book.<sup>1</sup>

*It is unclear at the moment whether some disillusioned LPs might conclude that this is a game that is just too hard to play.*

Josh Lerner (quoted in Borel, 2004.)

## 1.3 THE CHALLENGE OF VENTURE CAPITAL FUND VALUATION

Venture capital is a subclass of private equity that poses specific challenges, mainly because of the difficulty of valuing such investments. This book was partly motivated by our involvement in internal and external discussions on how to address the requirements of “fair value” accounting under the new International Financial Reporting Standards (IFRS) and the treatments of risks under the new Basel Accord (Basel II) or the new Capital Adequacy Directive (CAD II). Not only banks but also other institutional investors under regulatory supervision, such as insurance companies, become more and more concerned about the quantification of risks.

Before talking about risks, however, one needs to tackle the question of valuations, and already at this point the problems become apparent. Established techniques can only be applied with restrictions, under heroic assumptions or not at all for venture capital funds. Because of the difficulties inherent in valuing investments in innovative technologies, early stage investments have so far caused significant problems for many institutions and have led to a strong reluctance to become exposed to such assets. It is not only impractical but also conceptually questionable—at least during its early years—to value a fund “bottom-up” by assessing individual portfolio companies. We will argue that looking at the so-called net asset value (NAV) alone is an oversimplified way of assessing the value of an investor’s stake in a private equity fund, ignoring material factors such as the undrawn commitments that are still to be paid into the fund and, notably, one of the most important factors stressed by all industry players, the quality of the fund manager.

---

<sup>1</sup> For example, publicly quoted private equity funds, publicly quoted private equity funds-of-funds, or collateralised fund obligations. In 2001 in the landmark “Prime Edge” transaction Capital Dynamics raised \$175 m by a collateralised private equity fund obligation. With such a securitisation, investors who do not normally buy private equity were also given access to the asset class.

## 1.4 HARD FIGURES OR GUT INSTINCT?

In the investment industry the majority of managers have a strong quantitative orientation and feel comfortable with the disciplined application of a decision science-based tool set. Precise projections of returns, risks and correlations have become an indispensable part of the modern investment management process. Specifically in the hedge fund industry, where occasionally even part of the investment decision is “delegated” to computer-based “black boxes”, this may be driven to the extreme. There is a heavy dependence on “proven” models and high quality data that give reliable forecasts.

At the other extreme, according to Swensen (2000), *“judgemental investors rely on ‘gut instinct’, managing portfolios by the seat of their pants. Sensible investment operations avoid both extremes, melding reasonably rigorous quantitative disciplines with a substantial dose of informed judgement. Combining hard quantitative inputs with soft qualitative inputs satisfies the notion that successful investment operations incorporate both hard and soft factors”*.

## 1.5 MANAGING WITH FUZZY FIGURES

In private equity the poor quality, limited availability and even the non-existence of data restrict the application of a quantitative tool set significantly. Some think that ever-increasing transparency and standardisation one day will have created a basis that makes a quantitatively driven management of these assets feasible. We do not believe that this is possible, as the industry is private and transparency therefore has its limits. Moreover, for venture capital, which is by definition mostly innovation, the environment is continuously evolving. Consequently, precise quantification is, in our eyes, out of reach in principle.

The focus on “risk” in venture capital may even be off the mark. In fact, because of the long time horizons and due to the nature of investing in innovative technologies, the traditional risk measures fail at capturing the “unknowns” of an uncertain environment that characterises this alternative asset class. Therefore, an investment process has to take this into account. In this context, Courtney, Kirkland & Viguerie (1997) remarked that danger lies *“at the other extreme: if managers can’t find a strategy that works under traditional analysis, they may abandon the analytical rigour of their planning process altogether and base their decisions on gut instinct”*. Unfortunately, this phenomenon appears to be all too common in venture capital investing.

## 1.6 MAKING THE GRADES

Building on the established credits rating principles, we developed a system for grading private equity funds. This so-called “grading” is a structured approach that takes quantitative and qualitative criteria into consideration.<sup>2</sup> With this technique we have developed a new way of tackling the questions associated with valuations, portfolio and risk management of private equity funds investment programme. As Raschle & Jaeggi (2004) pointed out, *“other*

---

<sup>2</sup> We use the term “grading” as the formal definition of a “rating”, according to Krahnen & Weber (2000), is based on the concept of defaults and therefore is not applicable to private equity funds.

*rating models, or models based on a systematic approach, have to date rarely been published in the literature or practised in the private equity industry . . . only those fund-of-funds providers can be successful who have a clear basis for making their investment decisions and who are able to state the reasons for their decisions”.*

### **Box 1.1: Private equity as winemaking**

Private equity funds are blind pool investments, they are very long-term oriented and are exposed to economic cycles. As cycles are difficult to predict and as funds run over many years, most investors just try to identify the best funds available in the market, the so-called “first quartile fund managers”. To illustrate this approach, think about wine-making—it is not without reason that expressions like “vintage years” are used in the private equity industry. By convention, the vintage year typically is the calendar year in which a fund is established and the first drawdown of capital is made. The analogy to wine is not far-fetched and in fact is referred to occasionally.

*It is easier to pick a good wine if one starts with a list of the vintage years. As in wine-making, venture capital has its good years and of course its bad years. Sometimes the quality of the year is not apparent until some maturation has taken place, but in many cases the indicators are apparent from the environment and maturation merely serves to confirm what everybody feared in the first place . . . it will take a fair amount of tasting and time to see what the quality is and which hardy stocks modestly reward the palate. Quality brands will always stand out.*

Smart (2002)

The difference between “traditional” asset classes and private equity funds can be compared to the difference between “ordinary” agriculture and wine-making. While it is quite common to grow at one time, say, wheat and at another time corn on the same piece of land—or even leave it idle from time to time—one cannot switch in and out from and to wine-making. A vineyard has to be cultivated consistently and over many years. For example, the average age of the vines at Smith Haut Lafitte is 30 years. Like a wine-grower, limited partners need to take a long-term perspective and need to be patient. Either this market attracts you and you decide to enter and stay in, or you forget about this market entirely. The entry barriers and switching costs are prohibitively high.

We know—or at least assume—that the market is profitable but we have to manage it in the best way. We need to build a portfolio of good fund managers and prune the bad ones. As in private equity, there are good vintage years for wine and bad ones. The wine-grower will not know in advance which ones will be spectacular and which ones will only be good for vinegar. Nevertheless, to make good use of his resources, he needs to participate in all vintage years regardless, because the good years will—according to historical observation—compensate for the bad years. Every wine-grower follows this basic approach to cultivate the vineyard. This approach leads to a certain average yield that can only be measured and improved over the long term, as the influence of weather etc. varies over time and as any improvement will only become visible after several years.

If the wine-grower aims for improvements and deviates from this approach, the yield may change; as the techniques in wine-making have been developed and tested over centuries, the assessment of the change’s impact is only possible through long-term observation.

## 1.7 OUTLINE

In this book we take the practitioner's view and aim to give an integrated picture of a well-structured private equity investment programme. While we cannot present a magic formula that can give you immediately the sustainable high double-digit returns everybody is dreaming of,<sup>3</sup> we discuss the components of such a programme and how they are intertwined. In this discussion we focus on the principles rather than describing a specific environment. The set-up of a private equity investment programme is a complex task and is associated with a series of technical and organisational challenges. The process to starting a programme can take several years. To have any effect on the overall portfolio return, a significant percentage of the total assets under management has to be allocated to private equity. One could argue that this is best outsourced to a fund-of-funds, but for many medium-sized institutions there may be a case to set up their own in-house programme. Our book is organised in five parts as follows:

- We give a broad outline of the private equity environment with its structures and its dynamics.
- We define an investment process for a private equity fund investment programme.
- We describe the main tools for designing a portfolio of funds: portfolio construction, liquidity management and fund grading.
- To manage such a portfolio, a series of tools exist: we discuss monitoring, secondary transactions and restructuring in more detail.
- We demonstrate the application of our techniques in the context of managing in an uncertain environment.

The techniques we propose here for venture capital can also be used for private equity in general, although for later stage investments other tools could be more meaningful. For the purposes of this book we use the term “private equity” whenever data, observations or concepts are applicable in general, while we use the term “venture capital” when we discuss the specific challenges.

Many of the concepts presented here have been researched and developed in the course of our work with the European Investment Fund. However, for this book we have researched private equity market practices and discussed different approaches with industry practitioners. We target commercially-oriented institutions that are either already managing or considering setting up a private equity funds investment programme. Rather than proposing an “ideal” programme, we discuss various methods and trade-offs. Therefore, the statement made in this book represents the personal opinion of the authors and does not necessarily reflect the views of the European Investment Fund.

---

<sup>3</sup> If we could, we would be spending our time differently . . . sigh!



## Private Equity Market

In the broad sense, “private equity” means a security that is not registered and not publicly traded on an exchange. In the USA, private equity securities are exempt from registration with the Securities and Exchange Commission because they are issued in transactions “not involved in any public offering”. Private equity investments are usually considered part of the family of alternative investments. Bance (2004) defines private equity as “*investing in securities through a negotiated process*” and emphasises the non-standardisation of the approaches followed. Private equity managers provide financing to private firms unable, or unwilling, to seek funding through public equity markets. Private equity is one of the most expensive forms of finance. Issuers are generally firms that cannot get financing from the debt or public equity markets.

Institutional investors typically focus on the “organised private equity market”, where professional management is provided by intermediaries.<sup>1</sup> There is also the “angel capital” or the “informal private equity market” that, not without justification, is often called “family, friends and fools”. The number of investments made in the informal private equity market is probably several times larger than the organised private equity market, but it is difficult for institutional investors to gain the information necessary to invest in these markets efficiently.<sup>2</sup> Institutions typically need to invest in larger chunks than is appropriate for angel investing and they have certain standards that need to be met if the opportunity is considered to be of institutional quality.

### Box 2.1: Is private equity an asset class?

Modern portfolio theory suggests that asset allocation is generally more important than the selection of individual investments and requires estimations of correlations of returns among asset classes. A group of investments may be called “asset class”, when these investments are considered similar in potential risk and return but different from other existing asset classes. The three core asset classes are stocks, bonds and short-term securities or cash equivalents. It is most likely the scarcity and the low quality of the data available on the private equity market that explain the discussion about private equity being an asset class or not. While many large and well-established portfolio managers have for long operated under the working assumption that private equity is an asset class with its own right, quantitative analysis have failed so far to provide final evidence that these investments have a different risk–return profile.

<sup>1</sup> See New (2001).

<sup>2</sup> As Ender & Jaeggi (2003) pointed out, historically the overall private equity market did not appear to achieve the “top returns” associated with this asset class.

In efficient markets the difference between top and median performance is relatively small, making the asset allocation decision very important. In private equity, the spread between top and bottom performance is in the double-digit percentage range. Therefore, for asset allocation decisions, the question of its characteristics as an asset class are of less relevance.

How significant is available statistical data? Private equity does not have reliable measures of return and correlation, while some degree of comparability exists for private equity funds. The mainstream limited partnerships are conceptually very similar and therefore allow some degree of modelling; on the other hand, the long investment horizons and the technical innovation cast questions on the relevance of historical figures. Available statistics may be representative for a specific environment but this environment is likely to change.

Can we base our projections on such data? At least they define the envelope of the possibilities and the “laws of gravity” of this asset class, as they also form the basis of the expectation for an investor about to enter the private equity fund market. While evolution is any process of growth, change or development, we cannot expect that this evolution will alter the overall characteristics of private equity as an “ecological niche” within the ecosystem of all asset classes. The metaphor “Red Queen” represents the situation in nature where creatures must adapt quickly to changing environmental threats just to survive from generation to generation.

*In Through the Looking Glass*, Alice complains to the Red Queen that she has to run just to stay in the same place. “Well, in our country,” said Alice, still panting a little, “you’d generally get to somewhere else—if you ran very fast for a long time, as we’ve been doing.” “A slow sort of country!” said the Queen. “Now, here, you see, it takes all the running you can do, to keep in the same place. If you want to get somewhere else, you must run at least twice as fast as that!”

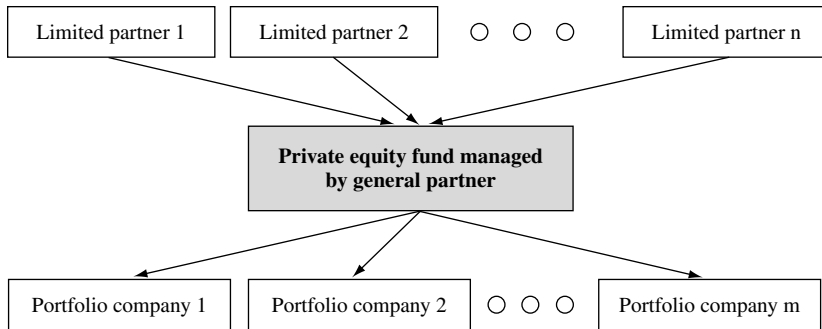
Lewis Carroll

According to this principle, evolutionary systems need “all the running they can do” because the landscape around them is constantly changing. We therefore believe that for private equity funds historical data can provide a yardstick, possibly with modifications to recognize structural changes and to compensate for anomalous periods, and assume that the available benchmark statistics for the entire private equity fund market—albeit stale—nevertheless can be seen as indicative.

## 2.1 FUNDS AS INTERMEDIARIES

The organized private equity market is dominated by funds—generally structured as limited partnership—as principal financial intermediary. Fund management companies—also referred to as “private equity firms”—set up these funds. Private equity funds are unregistered investment vehicles in which investors (the “limited partners”) pool money to invest in privately held companies. Investment professionals, such as venture capitalists or buyout investors (known as “general partners” or “fund managers”), manage these funds.

Tax, legal and regulatory requirements drive the structuring of these investment vehicles with the objectives of transparency (i.e. investors are treated as investing directly in the underlying portfolio companies), low taxation and limited liability (i.e. investors liabilities are limited to the capital committed to the fund). While terms and conditions, and investor rights and obligations, were defined in specific non-standard partnership agreements, the



**Figure 2.1** Private equity fund as pooled investment vehicle

limited partnership structure—or comparable structures used in the various jurisdictions—has evolved over the last decades into a “quasi-standard”:

- The fund usually has a contractually limited life of 7–10 years. The fund manager’s objective is to realise all investments before or at the liquidation of the partnership. Often there is a provision for an extension of 2–3 years.
- Investors—mainly institutions such as pension funds, endowments, funds-of-funds, banks or insurance companies, or high net worth individuals or family offices—are the limited partners and commit a certain amount to the fund. There is little, if any, opportunity to redeem the investment before the end of the fund’s lifetime.
- The main part of the capital is drawn down during the “investment period”, typically 4 or 5 years, where new opportunities are identified. After that, during the “divestment period”, only the existing and successful portfolio companies will be further supported, with some follow-on funding provided to extract the maximum value through exits. The manager’s efforts during this time are concentrated on realising or selling the investments.
- Commitments are drawn down as needed, i.e. “just-in-time” to make investments or to pay costs, expenses or management fees. Because private equity funds typically do not retain a pool of uninvested capital, their general partners make capital calls when they have identified a company to invest in. Therefore, the main part of the drawdowns is invested immediately.
- When realisations are made, or when interest payments or dividends are received, they are distributed to investors as soon as practical. Thus, the fund is “self-liquidating”, as the underlying investments are realised. However, these returns came mostly in the second half of the fund’s lifetime. Distributions can also be “in kind” as securities of a portfolio company, normally provided that these securities are publicly tradable.
- The management fees depend on the size of the fund. They generally range from 2.5% of committed capital for funds of less than €250 million to 1.5% for the larger buy-out funds. The fees are often scaled down once the investment period has been completed and adjusted according to the proportion of the portfolio that has been divested. There are, however, considerable differences from one fund to the next, particularly relating to what the managers do with income and expenses from their investment activity, such as directorship fees or transaction costs. These can have an impact on the returns and often account for material differences between gross and net returns.



- The main incentive for the general partners is supposed to be “carried interest” of, typically, 20% of the profits realised by the fund. Usually carried interest is subject to a “hurdle rate”, so that it only applies once investors have received their capital back and a minimum pre-agreed rate of return.
- Limited partners are simply investors with little or no influence on the day-to-day management of the fund. The interests of the limited partners are aligned with those of the general partners mostly by the managers’ own commitment into the fund and by the profit share or carried interest of the manager.

### Box 2.2: The J curve

Between the inception and the termination of a fund, its interim returns, expressed as internal rate of return (IRR), follow the so-called “J-curve” pattern. Private equity funds tend to demonstrate a decline in value during the early years of existence—the so-called “valley of tears”—before beginning to show the positive returns in later years of the fund’s life (see Figure 2.2). The phenomenon is often more pronounced for venture capital, because it takes several years for value to be created.

This pattern—also referred to as the “hockey stick”—is explained by the funds’ structure with set-up costs and management fees, as well as by the valuation policies followed by the fund managers.

### SET-UP COSTS AND MANAGEMENT FEES

As it is common practice to pay the management fees and start-up costs out of the first drawdowns, initially the value of the fund’s assets is less than the initial capital invested. Furthermore, during the early years, these fees and the set-up costs, compared to the

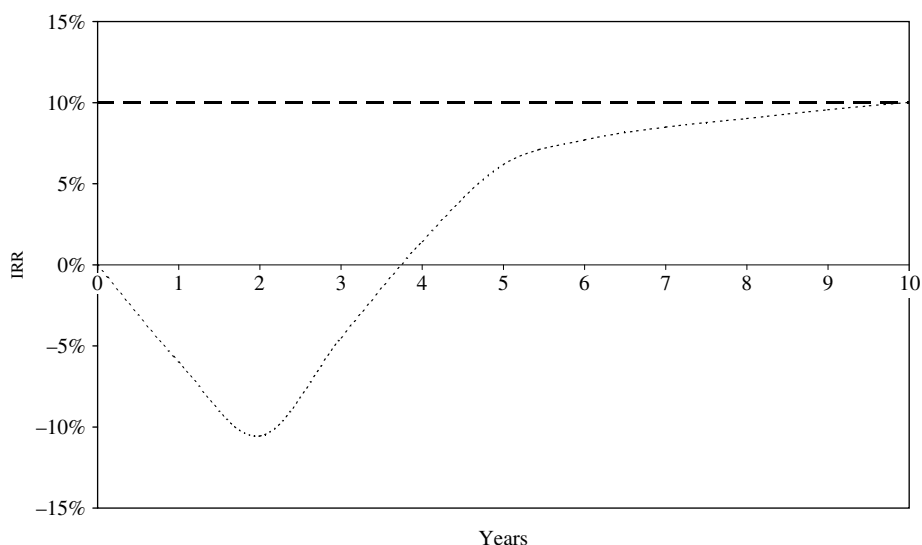


Figure 2.2 Fund standard J-curve

capital actually invested, appear disproportionately high, as the basis for their calculation is normally the total fund size and not the capital invested.

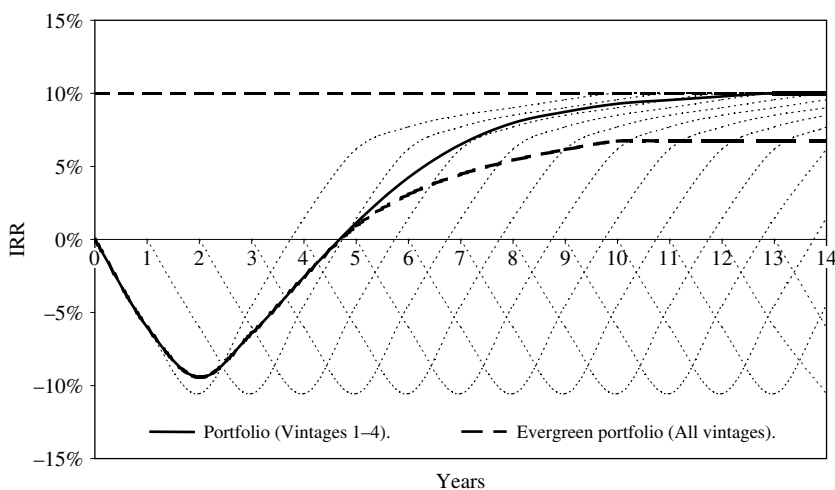
## VALUATION POLICY

When the fund is still in progress, the interim IRR computation takes the NAV as the last cash flow and assumes the liquidation of the portfolio at the current fund valuation. Therefore, the interim IRRs are subject to the valuation policy and its uncertainties inherent in private equity investments. In general, write-downs and write-offs are more likely to occur early on in the life of a fund than write-ups. This comes from the use of conservative valuation methods. They require recording of any impairment as soon as it is known, and preclude from revaluating upwards, promising investments before the occurrence of an event that would warrant an upward revision in value, such as a subsequent round of financing (or, under the new valuation guidelines, a change in fair value). Furthermore, realisations of successful investments require time and will only come in later years. For all of these reasons, even future top performers will normally show a negative return in their early years.

*Lemons mature faster than pearls*

Proverb in Venture Capital

Meanwhile, the interim IRR becomes more meaningful as a fund matures and as the calculation relies less on subjective valuations and more on actual distributions of cash and stocks. The margin for error narrows significantly with growing age of the fund and reduced uncertainty. The first 4–6 years can give no real indication of final returns. After this period, the interim IRR will provide a reasonable indication of the final IRR. According to Burgel (2000), this period is shorter for buyout funds than for early stage and development funds. In any case, the true performance of the fund will only be known after the last distribution has been returned to the investors.



**Figure 2.3** Portfolio standard J-curve

## PORTFOLIO J CURVE

As portfolios are linear combinations of funds, they do have a similar J-curve pattern (see Figure 2.3), but more pronounced in the sense that the time to report a positive IRR and to get to the final IRR will be longer. However, the portfolio's "valley of tears" should not be deeper than the average of those of the funds in its portfolio. This last statement only holds when the portfolio is managed in-house, as, when outsourced, the additional layer of fees will increase the "valley" but not significantly.

## FAIR VALUE AND THE FUTURE OF THE J CURVE

Will the new fair valuation guidelines (see AFIC, BVCA & EVCA, 2004) drive the J-curve to extinction? Under the revised IAS 39, which triggered these new guidelines, there should be no conservative bias and the portfolio companies' valuations should reflect their economic values, i.e. the net present value of their future cash flows. Therefore, that would only leave set-up costs and management fees. But if we want to determine the fair value of a fund we would need to take that into consideration too. And therefore this impact should also vanish. Later in this book, we develop a methodology to estimate the fair value of a fund.

From a strictly legal viewpoint, limited partnership shares are illiquid, while in practice secondary transactions occasionally take place.<sup>3</sup> There is a private equity fund-raising cycle, and in regular intervals general partners need to return to the capital markets to fund-raise for another fund. As they rely on an exemption from the registration of the offer and sale of their securities, the general managers solicit qualified investors directly or through registered agents. One private equity management company can act as a "group", managing several of such partnerships in parallel. Typically, limited partnership agreements do not allow follow-on funds by same manager before the end of the investment period or a larger part of the fund is invested. Private equity funds primarily have the following functions:<sup>4</sup>

- Pooling of investors' capital for investing in private companies.
- Screening, evaluating and selecting potential companies with expected high growth opportunities.
- Financing companies to develop new product and technologies, to foster their growth and development, to make acquisition or to allow for a buyout or a buyin by experienced managers.
- Controlling, coaching and monitoring portfolio companies.
- Sourcing exit opportunities and realising capital gains on disposing portfolio companies.

Simplistically, fund managers get wealthy through the number of the funds raised and through the level of income they receive from these funds:<sup>5</sup>  $R = n \times r(s)$ , with  $R$  being the long-term prospect of becoming wealthy, determined by the number  $n$  of the funds the firm can raise and the returns  $r(s)$ . The returns are a function of the fund size  $s$ , as it influences

<sup>3</sup> See Lerner & Schoar (2002). Particularly in the context of securitisations, limited partners may also negotiate the right to transfer.

<sup>4</sup> See also Thalmann & Weinwurm (2002).

<sup>5</sup> See Sood (2003).

not only the management fees but also the carried interest the general partners receive. General partners aim to build their personal wealth by maximising  $n$  through managing fund groups, i.e. series of funds raised quickly one after another and often even run in parallel. Apart from maximising investment performance, they can generate income by increasing fee levels and by getting more capital for management. Capital under management can be obtained through raising more from existing investors or by seeking new classes of investors.

If general partners understand that their current fund is underperforming, they will not be confident that another fund can be raised once their results become apparent to their investors. One way out for them may be to try raising a follow-on fund as quickly as possible. If raising a new fund is not possible any more, only  $r(s)$  in the context of the fund currently managed can be maximised. In this situation fund managers begin to resist the limited partners' attempts to reduce fund size. Also, in cases where management fees depend on the valuation of portfolio companies, poor performers may try to maximise their income by avoiding writing down investments.

## 2.2 THE PROBLEM OF PREDICTING SUCCESS

While a wide divergence between top and bottom performers may provide an opportunity to do extremely well by selecting the top-performing managers, it also exposes the portfolio to a high degree of underperformance risk. If an institution is unlucky enough to pick a bottom-quartile manager, the returns will be likely to prove extremely disappointing.

*The greatest "risk" of investing in private equity is not so much that the underlying investments are in small companies that will fail more readily than a quoted company (though some undoubtedly do, particularly in early stage/start up funds). It is the risk of investments being committed to the funds of managers who do not have the skills to build, develop and successfully realize a portfolio of companies*

Aitchinson *et al.* (2001)

### 2.2.1 Can success be repeated?

Much of private equity's appeal for investors has been a consequence of the strong returns achieved by "top-quartile teams". There is a general belief that success in private equity is not luck, but based on skills. Various analyses undertaken suggest that past success is a good predictor for future performance.<sup>6</sup> Certainly one would expect that professional fund managers who have worked together to build companies could apply their experience to new funds and stand a better chance for success.<sup>7</sup> Their names are known in the industry; they have an established reputation of adding value to their portfolio companies and good opportunities will be referred to them. Therefore, there is a virtuous circle and "top teams" attract proposals of higher quality. As private equity investment is constrained by the volume and quality of proprietary deal flows, this gives top teams a higher probability of identifying

<sup>6</sup> See von Braun (2000) or Scardino (2004). Conversely, if the last fund was fourth-quartile, then the probability of the next one performing well appears to be low. See also Tierney & Folkerts-Landau (2001): "We do not have firm-specific performance data to verify how management performs over time, but many in the private equity industry believe that top management firms are capable of consistently outperforming their peers".

<sup>7</sup> See Pease (2000): "Moreover, there has been a prevailing assumption in the market place, and one that we have found exaggerated, that a select group of general partners consistently form these top-quartile funds".

opportunities and gives simply an informational advantage over other funds. Moreover, not only their reputation but also the increased sizes of their follow-on funds gives them stronger negotiation power vs. entrepreneurs and also vs. competing funds.

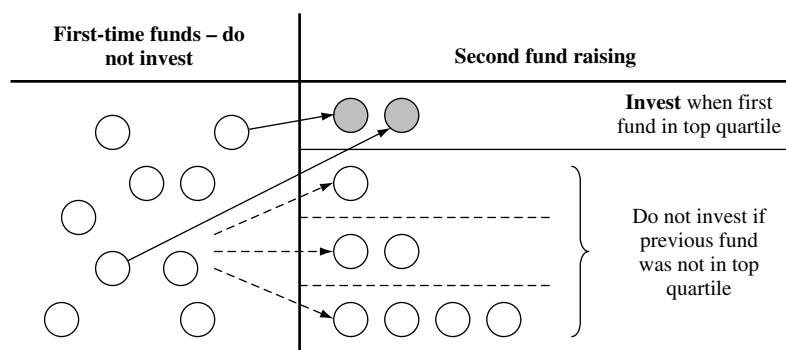
*If your first fund was top quartile, there is a 45% chance your next fund will also be top 25% and a 73% chance it will be top half. A new fund management team has a 16% chance of being in the top quartile . . . Success in private equity is persistent.*

Conor Kehoe, Partner McKinsey & Co.

Others disagree. The research firm Asset Alternatives studied 182 venture capital firms that had raised at least two funds.<sup>8</sup> The authors found that only 5% of the firms performed in the top quartile 50–75% of the time and only 3% of firms did more than 75% of the time. That means that only 8% of all firms<sup>9</sup> performed in the top quartile more than half of the time. *“If, in fact, there was a tendency for the same firms to perform in the top quartile, we would expect larger percentages at both the 50% and 75% levels”.* They conclude that past performance has been a fairly bad indicator of a successor fund’s future performance.<sup>10</sup>

Even if previous top-quartile performance may indeed be predictive for future success, this criterion is usually unobservable pre-investment, as the interim performance does not allow knowledge of whether or not the fund is first quartile when the investment decision has to be made.

As one example to explain the point (see Figure 2.4): according to analysis conducted by von Braun (2000), investors could benefit by letting the first-time fund pass and by investing in the follow-on fund if this first-time fund has performed in the first quartile of its peer group. Based on von Braun’s research, the probability of the second fund performing in the top quartile of the peer group would be 41%, consistent with comparable studies undertaken by McKinsey.<sup>11</sup>



**Figure 2.4** Superior returns through picking first time “winners”?

<sup>8</sup> See Pease (2000).

<sup>9</sup> Likewise, Scardino (2004) identified a group of 60 out of 522 (11%) private equity firms from around the world and across different fund types that have managed to deliver such sustained good performance.

<sup>10</sup> See also Söhnholz (2001): *“Hence, a particular fund’s return potential and level of risk are hard to assess at the beginning of the allocation process. This forces investors to put strong emphasis on fund research and analysis”.*

<sup>11</sup> See Leiter (2001).

This observation is certainly plausible. Such teams have proved their skills but are still “hungry” enough to give their best in the second fund. However, there are two problems to turn this finding into an investment strategy

- The follow-on fund is normally raised when the first fund is yet in its second or third year. At this point in time, it simply cannot be known for sure whether the first fund will really give a top-quartile return, and the limited partner has still to make his investment decision based on a largely unrealised track record.
- Furthermore, even in cases where the track record is reasonably certain, such fund managers raising their second fund will give preference to their existing limited partners. As a result, they will in all likelihood not do a “road show” and actually few institutions will know about this opportunity at all.

### 2.2.2 What is success?

One problem is that it is difficult to substantiate “success” in private equity. As the approach to equity valuations is based on comparisons, the typical definition, as used above, is “first-quartile”<sup>12</sup> performance. If we base our definition of success on the quartile position in the benchmark, comparison should be made against funds that are subject to same market conditions to assure that we are comparing apples with apples—that would be the vintage year cohort of the peer group. However, from vintage year to vintage year the composition of the peer group will be changing—rarely can two funds managed by the same management team be measured against the same peers. In other words, you may be comparing the first ten runners in the New York Marathon against the first ten of the “Volks” running event in the German Rhineland-Palatinate’s Trier – certainly in both cases a strong competition but definitely not the same league. Selecting the “best” funds with top-quartile performance is a challenging proposition and, in fact, is quite difficult to achieve on a consistent basis. Even “top funds” will not have achieved this at all times and, as such, “first quartile” relates to the majority of their funds at best.

*Lots of money has been lost on the assumption that a model that correctly predicts the past can predict the future.*

Dr Henry Kaufman

At the end of the day, the quartile position within the benchmark may not even be of relevance to investors who operate with absolute return target measure, such as “in excess of 15% per annum over the long-term”. If the overall return of the asset class is high, e.g. when only top quality funds comprise the peer group, this relative assessment is of less importance. Your limited partners will certainly “forgive” you being a “bottom-performing” fund manager if you have generated, for example, 10% return for them. Sometimes performance targets are defined as an out-performance against the respective quoted index (e.g. FTSE All Share in the UK), such as “between +3% and +5% per annum over the long-term”. So even if return figures are low and the fund performed at the lower end, investors may console themselves as long as the performance is in line with the target.

Probably the relevant measure for success, at least for the private equity firm, is whether it manages to raise a follow-on fund. It takes a while for a firm to “die out” because performance needs a long time to prove itself. According to normal terms and conditions, it is

<sup>12</sup> Or even “top decile,” see Fraser-Sampson (2004a).

permitted to form a new fund after at least 70–80% of commitments have been drawn down and invested. Jesse Reyes of Thomson Venture Economics (see Meek, 2002) argues that, while it is relatively easy to raise first or second funds, it is *“the third one that is hardest. If you raise a first fund, you can usually raise a second within a few years because it is still too early to tell exactly how the first one has done—there are few realisations. The third one is always much harder because by then, you’d better have some results to show investors”*.

### 2.2.3 Tolerance for failure

There are circumstances where funds have a very loyal investor base and, even when under-performing in most conventional respects, will continue to get funding.<sup>13</sup> Some investors, after all, are not driven solely by return objectives, but see “strategic” benefits. These might stem from the benefits of getting access to the knowledge of portfolio companies, e.g. in the case of corporate venturing.<sup>14</sup> Or they might be the relational benefits for a lending bank of investing with a manager who will need access to debt to finance leveraged transactions. Equally, the costs of switching from one manager to another are often so significant that many investors appear to have an unlikely tolerance for underperformance. In other words, history suggests that many managers have been funded beyond a point at which it might have been obvious that they were unlikely to be consistent top-quartile performers.

To some degree, success can also be a self-fulfilling prophecy. Strong group cohesion is relevant not only for the fund management team but also for their relationship with the limited partners. If crises have been weathered together, there is simply more tolerance for the inevitable occasional hiccups during a 10 year investment period.

## 2.3 BROAD SEGMENTATION OF INVESTMENT UNIVERSE

### 2.3.1 Institutional quality funds

Continuity is an important factor, and investors want to see that the general partners have set up organisations and cultures that make the fund sustainable. Occasionally advisors, gatekeepers or consultants use the term “institutional quality” regarding the funds they refer to their clients. Typically they get a little bit vague when asked to elaborate on a more specific definition. Generally, it is just a grand way of referring to funds managed by established groups without having a specific meaning.

The term “institutional quality” is the recognition that a fund management company is financially strong and a good organisation to deal with, having an established “brand” name, often with “star” investment managers, and which accepts investments only from selected high-quality limited partners. Additionally, it typically has a clear strategy and competitive strengths, shared responsibilities in the team, and manages succession through attracting, mentoring, training and retaining talent. Its track record is clear, as it has managed multiple funds with consistent top-tier performance. Such well-known top-tier funds have established

<sup>13</sup> Sood (2003) challenges this: “While this approach may be opposed to the received wisdom on the subject, and some managers of GP investments make a case for investing via relationship and access, here is an opportunity for investors to differentiate. The true question investors need to ask is whether the fund-of-funds manager is in the ‘access’ business, or alternatively acts to control moral hazard and to maximize return, as these two motivations are somewhat incompatible”.

<sup>14</sup> See Meek (2002).

networks for high quality deals, personnel, information and funding and can build on intangibles like reputation and bargaining power in negotiations that give them an edge. For example, a brand that enjoys a nearly mythical reputation is Sequoia Capital in the USA. Sequoia was involved in the startup of companies like Apple, Yahoo!, Google, 3Com and Cisco Systems. Raschle & Jaeggi (2004) identified Sequoia's key strengths as the choice of the right financing models, the fast recruitment of the best management staff for portfolio companies, thanks to its network, and its financial clout and staying power during market downturns.

As the industry is quite young and associated with certain personalities, it is difficult to build up a brand identity detached from certain individuals.<sup>15</sup> A fund management company only becomes a brand if it outlives those people associated with it by setting up structures and processes. So far this has been rather a US phenomenon,<sup>16</sup> but slowly fund brands are becoming established in Europe, too. Of course, "institutional quality" is an important decision criterion, particularly for investors with little familiarity in private equity. As in IT procurement, where "no manager got fired for buying IBM", a well-known fund is more easy to defend as an investment decision. As investment managers usually put it, *"I don't have to justify an investment in a top-tier firm to my boss and our board"*. A claim often heard is that institutional quality funds have a higher resiliency during market downturns, or, slightly cynically, that they are more likely to be backed by their investors, since it is more difficult to explain why to "pull the plug" if the fund enjoys such a strong reputation.

Moreover, consistently successful fund management companies have loyal investors who are likely to commit to future fund-raising, and who to some degree also benefit from the firm's reputation, as they are perceived as "quality investors". Rather than going through the hustle of a full-blown fund-raising exercise, the general partners quickly tap into their established limited partner base. Consequently, brands are exclusive and difficult to access, which opens opportunities for advisors who claim to be able to get an entry into over-subscribed funds. Sometimes these funds fail to fulfil their promise and their limited partners turn away, opening an entry route for limited partners that are newcomers in private equity. The due diligence concerns related to institutional quality funds is a large existing portfolio, total funds under management and an increase in management fees, which can jeopardise the carry-based incentive structure. General partners can often "dictate" their terms. As a result, the fund's structure—particularly high management fees or increased carried interest—can deviate from what limited partners would perceive as an "ideal" fund.

### **Box 2.3: Access to top funds**

A historical review of private equity performance reveals two important trends: first, median private equity returns tend to under-perform public equity indexes, and second, there is a wider dispersion between top-quartile and bottom-quartile returns than for funds of quoted assets. It is generally believed that there is a higher degree of repeatability of top-quartile performance in private equity. Under the assumption that the past and future performance of a fund are correlated, funds that have performed well in the past tend to be oversubscribed. If returns have been high, limited partners from prior funds are highly

<sup>15</sup> Bushrod (2004c) sees "true" brands in venture capital, rather than in buyouts. For buyouts it appears to be of less relevance, as financial techniques are more of a commodity.

<sup>16</sup> Maxwell (2004) gives the US firm Kleiner, Perkins, Caulfield, and Byers as an example of a "brand" that has successfully established a lasting organisation that regularly brings in new talent and has not been impaired by the departure of some of its founders.



interested to commit to follow-on funds. Even if follow-on funds are occasionally larger, the limited partners are then less shy to commit higher amounts.

Despite the growth of successful funds, there is a limit to what can effectively be deployed in the market. In venture capital the market can only absorb a limited amount of financing. To quote David Aronoff, general partner at Greylock Capital, the motto in venture capital is “undersupply of capital for oversupply of good ideas”. If too many institutions want to benefit from venture capital’s lucrative returns, there is a danger that this sector will become artificially inflated. In situations where the industry contracts, even better funds will need to downsize and force their limited partners to put their capital into either other funds or asset classes.

According to Flag Venture Management (2003b), access to the best funds is the number one entry barrier for newer funds-of-funds. Manager access is an issue for newcomers also because of the tacit convention within the private equity market that general partners will reward the loyalty of limited partners with virtual guaranteed access to future funds. The loyalty works both ways: if a limited partner stands with a general partner through a difficult investment cycle, that limited partner will almost invariably have access to the firm’s next fund. If a general partner has performed well with an initial fund, then that fund’s limited partners are very likely to sign on consistently as investors in future funds. It can take decades to build the reputation and relationships necessary to gain admittance to top-tier funds.

*But even if an investor had sufficient knowledge and resources to judge potential target funds, it would not guarantee access to them. This is especially true for the high quality funds, which usually are very selective when admitting new investors to their existing investor pools.*

Söhnholz (2001)

Private equity is a closed community where past relationships provide access to funds in high demand, while newcomers are often turned away. Frequently, when a fund with a strong track record raises a new fund, investors in previous funds quickly oversubscribe it. General partners are interested in maintaining the relationship with the existing limited partnership base. Looking for new limited partners is an expensive exercise, and it creates uncertainty regarding the timing of closing and future relationships.<sup>a</sup> Consequently, fund managers tend to avoid this exercise whenever possible. In the extreme, it will not even be known to outside parties that the team is raising a new fund. To get access a network of contacts is required to identify top funds and to know about the timing of their fund-raising activities. Most top funds give priority allocations to their previous investors, but may also allocate a share of the new fund to investors who could add value, such as deal flow, exit opportunities, industry expertise, etc. Access is therefore, of course, far less of a problem for limited partners who are financially strong and have demonstrated that they are long-term players in the market. For newcomers, however, this is an entry barrier.

<sup>a</sup>See also Lerner & Schoar (2002), who presented the theory that private equity fund managers, by choosing the degree of illiquidity of the security, can influence the type of investors the firm will attract. This allows them to screen for “deep-pocket” investors, those that have a low likelihood of facing a liquidity shock, as they can reduce the general partner’s cost of capital in future fund-raising. Their analysis is based on the assumption of an information asymmetry about the quality of the manager between the existing investors and the market. The general partner faces a lemons problem when he has to raise funds for a subsequent fund from outside investors, because the outsiders cannot determine whether the manager is of poor quality or the existing investors were hit by a liquidity shock. Transferability constraints are less prevalent when private equity funds have limited partners that are known to have few liquidity shocks, e.g. endowments, foundations and other investors with long-term commitments to private equity.

Historically, access to funds appears to be a US phenomenon and less of an issue in emerging private equity markets. But as it becomes accepted and matures, fund managers need to limit their fund sizes and become choosy about their limited partners. According to AltAssets (2003a), in Europe there are also examples of oversubscribed funds. This is expected to remain an important trend over the medium term that will reinforce the relationships of the leading fund managers.

### 2.3.2 Newcomers

Private equity firms regularly lose experienced professionals who spin out to launch their new funds. These professionals have developed track records under the old fund's "brand name" and can reference this investment track record while fund-raising. Moreover, there is a high likelihood that the limited partners from the old fund will back such a new team.

Few limited partners invest in funds set up by inexperienced managers, while many do not invest—or are not allowed to under their investment guidelines—in first-time funds at all. Their main concerns are the lack of sustained fund track record and the still doubtful long-term compatibility of the team.<sup>17</sup> One could argue that the investment reluctance is less an issue of having no track record available—since future equals past is a "heroic" assumption anyway—but more of a problem of justifying the investment decision if the fund turns out to be a "bottom performer". However, some of them are "emerging stars", i.e. quality teams that just lack a multiple-fund track record. Therefore, one should differentiate between first-time funds:

- *"Spinouts" or "first-time fund"*. These are funds managed by experienced fund managers who have already been working together in other established funds and have decided to set up their own operation. Many of the limited partners that invest in first-funds do so only if these funds are the result of a spinout of existing funds with which they are already familiar. They do so as these teams are skilled and highly motivated, sometimes in contrast to the situation with their previous employer, which may be faced with decreasing motivation of its key persons, internal tensions or unresolved succession issues. They can either pursue the same strategy or, to differentiate themselves, they often pursue unique strategies by focusing on niche industry sectors.<sup>18</sup>
- *"First-time teams"*. Often business angels, who only loosely cooperated before, partner and create a fund. In the extreme, these first-time teams are inexperienced individuals who have not worked together previously and who have little if any experience of private equity. They were a common feature of the private equity landscape during the "dot com bubble" and have taken a lot of the blame for the damage suffered by investors. The result, whether just or unjust, is that it has become extremely difficult for first-time teams to get their funds off the ground. However, in the case of newly emerging leading edge technologies, established teams often do not exist and, despite the associated team risk, there may be no other option than to assemble a group of academics and technical specialists around experienced private equity managers.

<sup>17</sup> There are also "softer" factors. Institutional investment professionals are neither compensated nor incentivised for investing in new funds. As such, investing in a new fund that subsequently underperforms is considered a more serious error than reinvesting in established firms. In a case where a well-established firm fails, a number of other reputed investors will have made the same mistake.

<sup>18</sup> By failing to provide a clear career path toward partnership for junior professionals, several private equity firms have lost experienced professionals who have spun out to launch new funds. It helps significantly, during the fund-raising process, if one can reference to an investment track record, preferably as a team.

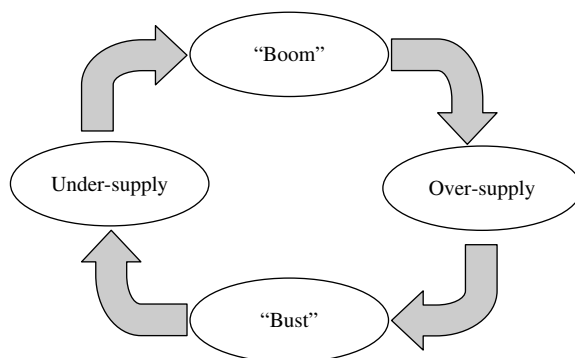
Even if teams have successfully worked together in the past, members of spinout funds may have unrealistic expectations from independence, their roles within the team still need to form and, probably most decisively, they still lack the trust of their limited partners. Nevertheless, Sachar and Jinnah (2001) suggest significant advantages in incorporating first-time funds in fund-of-funds' portfolios. The typical expectation is better returns, as first-time funds are seen as "hungrier" than established firms who have already made their fortune. Not only can such teams be exceptionally motivated, as their own future depends on the current fund, but they are also unencumbered by existing portfolios and can put all their energy on this investment. Investing in first-time funds not only gives access to tomorrow's "stars", but investors can also negotiate better terms and conditions, such as co-investment opportunities.<sup>19</sup> Finally, such newcomers are eager to develop strong relationships with early supporters.

## 2.4 PRIVATE EQUITY MARKET DYNAMICS

### 2.4.1 Boom-and-bust cycles

The organized private equity market is dynamic, intermittently expanding and contracting. The size of this market, and associated with it mainly the number of funds, is roughly in equilibrium with the target return. If target returns are not met, investors withdraw from this sector, while spectacular success stories attract new entrants. There is a "boom-and-bust cycle" particularly in venture capital:

- Boom periods in venture capital are often driven by technological changes, such as personal computers becoming a consumer product, the rise of the biotech industry during the 1980s, or the Internet revolution during the 1990s. The occasionally astronomical returns put this market on the institutional investors' map. Institutions also get political support—or even pressure—to get active in this area as governments start to harbour "Silicon Valley" dreams. Various measures create new entrants—investors, fund managers, entrepreneurs—in all areas of the market.



**Figure 2.5** Private equity market cycle

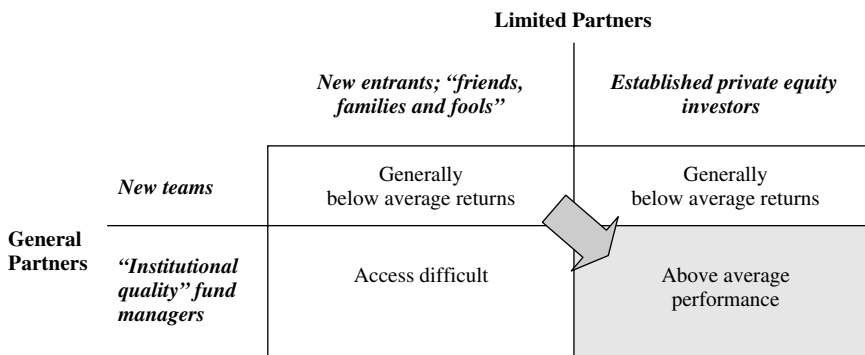
<sup>19</sup> Gordon Hargraves, Vice President, Rho Fund Investors: “We have invested a lot in first time funds . . . it is the result of our belief that first time funds are boosted to do well by making good investments rather than just by generating a large management fee. In addition you can often secure better terms by seeding emerging managers”.

- This invariably creates an over-supply of funds doing marginal deals at high acquisition multiples. Typically, the exuberant demand for start-ups leads to venture capitalists trying to “raid” universities and research laboratories for new ideas. Suddenly, immature technologies—ranging from developments still in the early R&D stage to the absurd—are marketed as “ready for the consumer” and the “next big thing”.
- The bust is inevitable. Many “boom funds” flop spectacularly, returns drop, new funding dries up and entrepreneurs return to consulting or banking. Institutions rein in or stop their venture capital investment programme, and there is a “flight to quality”, resulting in the shakeout of the majority of marginal fund managers.<sup>20</sup>
- This leads to an under-supply of fund managers and the associated funding in the sector—which is probably the sustainable equilibrium. The consolidation leads to less deal competition and to low acquisition multiples, which makes this again a highly profitable market.

Under ordinary circumstances with under-supply of funds and capital, picking top-quartile funds is highly difficult. However, even “bottom” funds can perform sufficiently well to make private equity investing rewarding. The market has contracted, so that the majority of fund managers being active are of high quality. Due to the general lack of financing, an entry for new limited partners will be easy. However, funds will be very careful not to antagonise their existing limited partners. During boom and over-supply periods, however, such high quality funds stand a much higher chance of outperforming their vintage year peer group; then they will be oversubscribed and difficult to access.

#### 2.4.2 The relationship between limited and general partners

A limited partner’s investment strategy is built around a small number of general partners focusing on specific segments, such as stages or sectors, of the market. The fund sizes of their existing relationships can only be increased up to a limit as, particularly in venture capital, there are clear limits to scalability. With more capital to allocate, limited partners



**Figure 2.6** Private equity market segmentation

<sup>20</sup> According to The PEO Column (2004), at the time of writing their comment, some industry players declared the need for a quarter of the private equity funds to disappear and were critical of general partners who were deliberately nursing rather than closing their terminally ill management companies.

have to invest into further funds, and it becomes more difficult to identify and access fund managers of comparable quality.

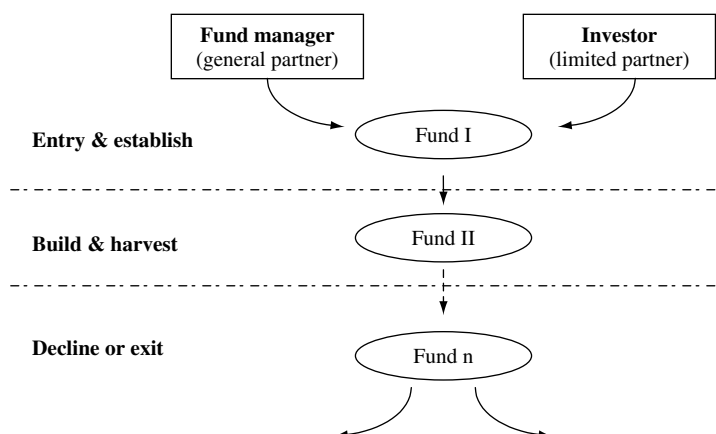
General partners, on the other hand, want financially strong, dependable, knowledgeable and long-term limited partners. Limited partners should have industry expertise and familiarity with the nuts and bolts, particularly valuations and benchmarking, of the private equity business. Adverse selection exists in the private equity market. Poor quality funds, be it inexperienced ones or “old dog firms” in decline, will court inexperienced investors. Because of the bad results, both will sooner or later leave the market again.

*Perhaps the future of private equity is a market place where a smaller number of elite GPs is investing on behalf of a similar rationalised group of LPs—with both sides sharing in the asset class's raison d'être: exceptional returns.*

Borel (2004)

### 2.4.3 Life cycle of limited and general partner relationship

To maintain continuous investment in portfolio companies, general partners need to raise new funds as soon as the capital from the existing partnership is fully invested, i.e. about once every 3–5 years. Relationships between limited and general partners are forged through various rounds. Initially criteria are very stringent, and fund managers usually cannot get rich through their first funds. The relationship goes over several rounds, resulting in a virtuous circuit of growing experience and fund size, etc. A favourable track record and experience is an asset in itself. It conveys information on ability and suggests that general partners take extra care to protect their reputations. Fund-raising is less costly for more reputable funds.<sup>21</sup> To minimise their expenses, fund managers, provided that their previous relationships were satisfactory, generally turn first to those who invested in their previous partnership. There is, of course, a downside, as many limited partners will decide to invest in the follow-on, because they comfort themselves that it is “too early to tell” and because they believe that maintaining the relationship is important.



**Figure 2.7** Fund manager–investor relationship life cycle

<sup>21</sup> See Prowse (1998).

**Table 2.1** Fund management company life cycle model

Entry and establish	Build and harvest	Decline or exit
Differentiation Difficult fund-raising	“Star” brand Loyal limited partner base	Unexciting Limited partners leaving and are replaced by other types of investors (secondary plays, new entrants in market)
Unknown: either “top” or “out”	Likely “top” performer	Not “top” but consistent performer
Funds too small	Fund size is right	Fund size too large/too many funds
Fund too small to get rich Management team forming	Best alignment of interests Management team performing	Key managers “made it” Succession issues, “spinouts”

For this discussion, we distinguish three phases in the life cycle of the fund manager—investor relationship: entry; growth/compete; and decline (lost competition) or exit (gave up or “made it”). There is certainly a “symbiotic” relationship between general and limited partners.

Arguably, the occasionally difficult initial fund-raising process could be interpreted as “courtship”. First-time funds note the importance of differentiation as it applies to fund-raising, thus they often pursue specialised investment strategies.<sup>22</sup> Entry barriers exist for investors and for funds. It is clear that, lacking a verifiable track record, new teams find it difficult to raise their first fund. New limited partners also face entry barriers. For example, they do not usually have access to the best funds, particularly where managers are over-subscribed (meaning that they often need to use gate keepers, etc.). They need to defend their investment programme continuously *vis-à-vis* their own sponsors.

It is an oversimplification to assume that investors only invest in top performers and that below-average funds are unable to continue. As in most relationships, there is a certain degree of tolerance for mistakes and failures, at least over some time. Not surprisingly, “marriage” and “divorce” are often used in the context of relationships between fund managers and their investors.<sup>23</sup>

Investors will not only look at how a team performed compared with the benchmark; they are mainly interested in the cash returned. Consequently, the relationship between fund managers and their investors can be relatively stable over a protracted time period. Lerner & Schoar (2002) presented evidence on the high degree of continuity in the investors of successive funds and the ability of sophisticated investors to anticipate funds that will have poor subsequent performance. While it is obvious that fund managers greatly benefit from a loyal and reliable investor community, long-term relationships can also be advantageous for limited partners:

- In the opaque private equity market, the search for and due diligence of funds is a costly exercise, and often limited partners prefer familiar fund managers to unproven investment proposals.

<sup>22</sup> See Thompson (1999).

<sup>23</sup> See e.g. Hellman & Katz, 2002: “Just as one fight shouldn’t wreck a marriage, one bad fund should not ruin a long-standing relationship between a fund manager and an investor. But, in order to strengthen the relationship, both sides need to be able to recognize and discuss what went wrong and how things will change going forward to maximize the chance of success for all”.

- For an investor it is especially desirable to hold on to good fund managers, as the best teams will have an established investor basis and therefore will no longer be out for fund-raising (especially during the growth stage).
- There is likely to be better planning, as limited partners early on indicate among themselves whether they will back a follow-on fund. As limited partners form a network, even if they do not have the means to continue, they often refer other investors to a good team. Predictable closing puts money at work more efficiently.

*Private equity is an investment, not a relationship . . . If you believe that you have a relationship with your fund managers you are going to be less inclined to pass on future investments. Look at recent history. It's the re-ups that have really hurt investors.*

Sood (2003)

It is clear that there are limits to disappointing results but, all things being equal, investors would tend to go with fund managers they already know or who have been referred to them through their network, rather than with new teams. Eventually the relationship ends, once the fund manager has “made it” and is not interested in raising another fund. Few teams manage a planned succession with new joiners eager to make it. Also, the limited partners eventually may end the relationship if they lose confidence or trust in the team, e.g. when the team becomes arrogant or fails to deliver. It is probably rather a gradual decline. Some limited partners do not invest in follow-on funds and need to be replaced with less than deep-pocket investors, or by secondary investors who see this rather as a “one-off” financial play.<sup>24</sup>

## 2.5 CONCLUSION

Investors as well as fund managers depend on forging long-term relationships. Anecdotal evidence suggests that experienced market players “pair” and profit over protracted time periods from this relationship.<sup>25</sup> For first-time teams, analysis of historical benchmark data supports the assumption that they suffer from higher “mortality” than established fund management teams. We are not aware of comparable data for the limited partners. However, one can safely assume that the high number of institutions that have reined in their activities in private equity over the last years did not do this because these investments met their expectations. They presumably suffered from the initial informational disadvantages that afflict all limited partners and make it extremely difficult to identify or gain access to the best managers. We conclude that, for general and limited partners alike, significant entry barriers into the private equity market exist. For limited partners it takes the disciplined execution of a long-term-oriented investment strategy to build up a portfolio of funds that gives attractive and sustainable returns.

<sup>24</sup> During the decline of a fund manager, limited partners may also be taking smaller stakes in follow-on funds to keep the option in case of recovery.

<sup>25</sup> The main mechanism to guarantee the validity of the fund managers’ valuations is that they invest a material share of their own personal wealth. For this reason, we believe that the current fragmented structure of the venture capital industry with many small funds is unlikely to change. In fact, this industry has many characteristics in common with other creative industries, such as Hollywood, where a limited number of players group together to be often fiercely competitive against potential entrants.

## Private Equity Fund Structure\*

Regulatory changes in the USA in the late 1970s permitted greater private equity investments by pension funds, but it was mainly the intermediation through limited partnerships that fostered a widespread adoption of private equity in institutional portfolios. According to Prowse (1998), the “*growth of private equity is a classic example of how organizational innovation, aided by regulatory and tax changes, can ignite activity in a particular market*”. The limited partnership as the dominant form is a result of the extreme information asymmetries and incentive problems that arise in the private equity market. While the limited partnership structure does not exist in all jurisdictions, generally local legislation allows this well-established form to be mimicked—for simplicity, and as we aim just to highlight broad principles, we will only refer to it.

For the fund, the “limited partnership agreement” defines its legal framework and its terms and conditions. It mainly addresses the allocation of capital gains or losses among partners, allocation of interim distributions, management fees to the general partner, possible investment restrictions, and major governance issues. For the general partner, an “operating agreement” sets, for example, the division and vesting of carried interest among individual fund managers. The management company enters into agreements with all employees and with the general partners. For the management company another operating agreement defines the division of management fees, or the licensing of name and trademark.<sup>1</sup> One private equity management company can act as a “group”, managing several such partnerships in parallel. Typically, limited partnership agreements do not allow follow-on funds by the same manager before the end of the investment period or before a high percentage (usually more than 70%) of the active fund is invested.

The main documents of the fund offering are the *private placement memorandum* which, in general, describes the investment proposal, the *subscription agreement*, which contains the contractual capital commitment and securities law exemptions, and the *limited partnership agreement*, which defines the right and obligations of the parties involved.

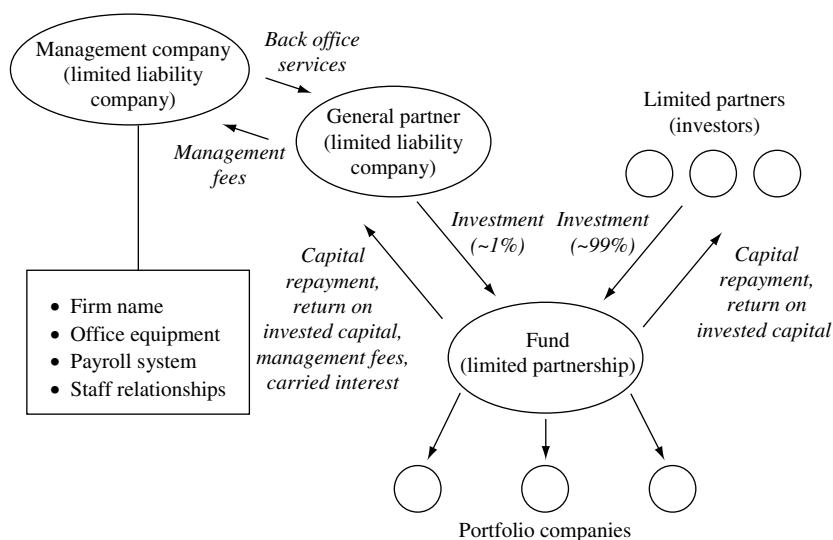
We do not intend to give a detailed discussion of the various terms and conditions in limited partnership agreements that are, with increasing sophistication of fund managers and investors, new regulation and changing economic environment, continuously developing anyway. We aim to explain the main principles of the currently prevailing standards and their rationale. In essence, conditions aim to align the interests between fund managers and their investors and to discourage “cheating” (moral hazard), “lying” (adverse selection) or “opportunism” (hold-up problem) in whatever form. Incentives are designed so that the fund manager’s focus is terminal wealth and performance, and that contractual “loopholes” are not exploited by producing over-optimistic interim results. Prowse (1998) analysed the mechanisms used to align the interests of

---

\* This chapter was not written by lawyers. It contains information of a general nature and is meant only to illustrate principles.

<sup>1</sup> See Muller (2004).





**Figure 3.1** Limited partnership structure

participants in the private equity market. He concluded that the direct means of control, such as partnership covenants or advisory boards, are subordinated to performance incentives, such as general partner compensation and reputation.

The idiosyncrasies of the limited partnership agreement's terms and conditions are motivated by the specific requirements for successful private equity investing. All parties involved need to be patient, as the development of start-up companies takes years. Not only qualified fund managers, who take a deep interest in building up companies, but also investors who understand how it is done need to be kept in line and—as in the case of venture capital most assets are intangible—need to trust each other. They also need a higher tolerance for frustration, as this activity is littered with setbacks. Explaining the J-curve to 30 expert limited partners is easier than communicating the concept to the public.<sup>2</sup> The general partners restrict the investors from leaving the partnership not only through the contractual arrangements, but they also need to build up trust through the investors' relationship. This trust building is reciprocated by the limited partners, e.g. through co-investing, investing in follow-on funds, supporting the fund through “side-funds”, and also through occasionally resolving ambiguities in agreements in the fund managers' favour. Especially here, Keynes' observation is true, that the job of investment would be better done if decisions were “*permanent and indissoluble, like marriage, except by reason of death or other grave causes*”.

While the analogy with marriages is strained, there are some important similarities, e.g. that all sides share equally in both risks and rewards. Partnerships should be structured so as to minimise the costs to limited partners, to optimise the revenues to general partners so that they reflect their added value and the market conditions, and to maximise the back-end payouts to all partners. Trust and open communication on both sides and confidentiality *vis-à-vis* outside parties are critical in maintaining a strong relationship. One bad fund should

<sup>2</sup> Which may also explain why, in this industry, fund managers prefer not to be constrained by public disclosure restrictions. Investors in listed vehicles can only be kept happy through frequent good news.

not ruin a long-standing relationship, but should lead to changes that maximise the chance of success for all. Based on this, one could conclude that investing in follow-on fund should not be an automatism, but requires a thorough review of the investment rationale and a comparison with other opportunities every time.

While investors certainly have to go “for the best deal”, they need to understand that in a volatile economic environment, with continuously changing power between general and limited partners, there are trade-offs between long-term objectives and short-term gains. Consequently, there are a lot of key issues that either cannot be written in contracts or are not enforceable, and therefore need to be addressed in different ways.

Flag Venture Management (2003b) argues that partnership agreements “*should provide a framework within which the incentives are aligned for LPs and General Partners (GPs) to succeed—or fail—together. We aren’t looking to extract every last concession from GPs to make up for poor performance in the ‘bubble’ funds. Instead, we’re looking to create a forward-looking, ‘win-win’ [or lose-lose] partnership agreement*”.

### 3.1 KEY FEATURES

According to a survey undertaken by Blaydon, Wainwright and DeOliveira (2004), a majority of both general and limited partners believe that a model limited partnership agreement would be a useful starting point for negotiating investments in private equity funds. The authors identified, as main challenges to model agreements, the differences between venture capital and buyout sectors, the resistance of “top-tier” general partners,<sup>3</sup> and the low likelihood that general and limited partners agree on a standard.

Limited partners are more disposed to strengthen the limited partnership agreement as a governance document—especially regarding disclosure (i.e. in relation to conflicts of interest, disclosure of changes of limited partners, transfer of general partner’s interests, valuation of distribution in kind, or purchase prices in the case of limited partnership interests sold via the secondary market). They also want the fund managers to attest compliance with the terms of the limited partnership agreement before and after a capital call. In addition, limited partners will likely seek additional means of being compensated for the higher risks associated with private equity investments, e.g. through higher hurdles or more favourable governance provisions.

As the industry develops, fund sizes diverge and specialist players emerge, standard terms are not appropriate to ensure alignment of interest in all situations. Changes to partnership terms going forward will most likely be in the details of the limited partnership agreement, rather than broad structural changes. The limited partnership in its current form is generally perceived as best adapted to the existing market environment, but this environment never stands still and in an unregulated industry the “mainstream” is continuously changing. In the highly fragmented private equity market, competition and the differences between local legislations imply diversity in fund terms and conditions, especially in the European framework. Emergence of new terms and conditions are of course also driven by changes in the regulatory and economic environment.

Deviations from the mainstream or even newly evolving best practices are also driven by the need for differentiation as new fund managers try to enter the market. Innovative

---

<sup>3</sup> Funds with the best track record and a long line of institutions waiting to invest have no motivation to compromise. They will continue to demand more than their peers.

approaches are important for newcomers, as they will often only be able to attract investors with a differentiated approach. First time funds note the importance of being special to fund-raising. This implies developing a niche or differentiated investment strategy as the key to success. As institutional investors also need to diversify their portfolios, there is also a demand for differentiation. In times of a difficult fund-raising environment, investors use their significant bargaining power over private equity to negotiate more advantageous terms. On the other hand, successful general partners control the access to their funds and can achieve favourable above-market average terms.

As environment and motivation of general and limited partners change over the market cycles, so do the structural relationships. While many of the main terms usually do not make significant structural shifts, their details, e.g. 2.5% management fees, their calculation method and basis are negotiable. On the other hand, in practice the majority of limited partners tend to favour standard terms and therefore can stifle efforts of one potential investor to significantly alter the terms and conditions.

It is the economics and the alignment of interests between investors and investment managers rather than the partnership agreements covenants, the advisory boards or the committees composed of limited partners that help to overcome some of the problems of the principal-agent relationship. For this alignment, the structures foresee management fees, performance-related incentives, hurdle rates and, most important, commitments by the general partners of significant portions of their wealth alongside the limited partners. Additionally, clauses relate to reinvestments and claw-backs, and non-economic terms such as key person provision, joint-and-several liability and disclosure obligations. They provide limited partners with moderate control over the management of the fund.

*The truth of the matter is that the best performing funds—those that everybody wants to be in—can set terms however they wish, even in a down market.*

Meek (2004b)

### 3.1.1 Corporate governance

The law<sup>4</sup> and the partnership agreement restrict the limited partners' degree of control over the general partners' activities. Such controls relate mainly to the extension of the investment period, valuations, conflicts of interest, or key person-related issues. The limited partners can only take decisions either with a simple majority (e.g. extension of the investment period or the fund's duration) or with a qualified majority (e.g. bad leaver). Further corporate governance instruments are bodies like the advisory board or the board of directors. Also, an audit and valuation committee may be meaningful. Occasionally the limited partners are also offered participation in an investment committee. However, do limited partners really want to take on this liability? Generally, international industry professionals recognise that fund managers should take investment and divestment decisions without direct involvement of investors, as this typically leads to a dilution of the fund managers' responsibility, and as investors do not normally have the legal rights and the required skills and experience to make such a decision.

Another important element of corporate governance is disclosure. Various private equity and venture capital associations, such as EVCA, BVCA or AFIC, have released guidelines for valuation and reporting. The obligation to disclose in line with these guidelines is

---

<sup>4</sup> In limited partnership structures, a too-active limited partner could be reclassified as a general partner and lose its limited liability.

increasingly made part of the contractual agreements. Also, in this routine reporting fund managers follow different approaches. While some general partners reduce the level of detail provided to the bare minimum and share it with all limited partners, others share different levels of detail according to the specific type of investor.<sup>5</sup>

Intensive communication between general and limited partners at all stages of the investment process is the most effective non-structural method for creating alignment, as nobody likes surprises.<sup>6</sup>

### 3.1.2 Investment objectives, fund term and fund size

In limited partnership agreements, the description of investment objectives should be specific, but not too narrow. Lerner (2000) argues that private equity funds are blind pools for a reason. Investors should not attempt to overly limit fund managers' flexibility, as with uncertain investments and severe information asymmetry they can figure out ways around these restrictions anyway.

Fund terms of typically 7–10 years, with possible extensions by up to 3 years, represent the trade-off between better IRR, sufficient time to invest and divest, and degree of illiquidity still acceptable for the investors. Normally, the extension of the fund's life is approved annually (1 plus 1, not 2 years right away), and management fees are reduced or cut back to zero, to stimulate shift exits.

The fund size, in terms of capital committed by the limited partners, needs to be in line with these investment objectives. On the other hand, various factors such as management resources or number of potential opportunities implicitly set a maximum size. Conventional wisdom suggests that in smaller funds the general partners work harder. While the limited partners' commitments are contractually fixed, this is not "carved in stone". During market downturns, inflow of capital combined with a substantial decrease in investment activity create overhang of unfunded commitments that cannot be efficiently put to work. Not only do follow-on funds then become smaller, but also fund managers who are interested in nurturing a long-term relationship with their investors may even return capital, despite the associated reduction in management fees.

Normally, proceeds are distributed to investors as soon as practical after the realisation of or distribution from a fund's assets. In some cases, e.g. when investors are confident about the fund manager, limited partnership agreements foresee reinvestments. Also, limited partners often grant the fund managers the discretion to reinvest proceeds that are realised during the investment period. Re-investments are not uncommon for venture capital funds but are rarely used for funds focusing on buyouts.

### 3.1.3 Management fees and expenses

Management fees provide a base compensation, so the fund manager can support ongoing activities of funds. In private equity, remuneration is overwhelmingly performance-driven

---

<sup>5</sup> Associated with the Freedom of Information Act debate in the USA on transparency for public institution limited partners, this approach was seen as a way out of the dilemma. It went even so far, that such limited partners are obliged to destroy the material provided by the fund manager as soon as practical.

<sup>6</sup> See Hellman and Katz (2002): the "*increased communication enables GPs and LPs to better understand each other's actions and motives, creating an atmosphere of long-term partnership that both sides profess to desire*". Investors also demand transparency related to co-investors and co-investment terms and conditions.

and there is a consensus that general partners should not be able to make significant profits on the fees. Management fees need to be reduced to a low level to make the fund managers primarily motivated by the carried interest.<sup>7</sup> During the investment period, fees are on a commitment basis, so as not to give an incentive to go for volume instead of quality. Fees ramp down at the end of the investment period or with the raising of subsequent funds.

There are thresholds for management fees, where the operation of the investment of the fund is either not viable or is economically not meaningful for the general partner. With relatively small funds, 2% commitment-based management fees barely cover expenses, while for larger funds percentages need to be reduced to keep the fund manager focused on delivering investment performance. Consequently, fees are within this “band” and are driven up and down by changing the bargaining power of general and limited partners.

When management fees are “meagre”, the fund manager may be looking for other compensations, such as fees for sitting on the boards of directors of portfolio companies, for providing consulting or management services, or for advising on transactions. To counter this incentive to become distracted from investment management, limited partnership agreements foresee that these fees are fully or partly set-off against the management fees. Indeed, why should investors pay twice for the same service, once via the management fees and once via an expense to its indirect investments?

Investors want to review the fund manager’s cost base before accepting a fee level or want to set caps for organisational expenses. A review also takes into consideration factors beyond the specific limited partnership, such as the number of funds simultaneously managed by the fund manager. In this situation, investors frequently request management fee reductions or exclusivity provisions in the limited partnership agreement to address the issue of overlapping fees. Some investors even move towards budgeted management fees, in which a fund’s management fee is charged based on its operating budget, e.g. as approved annually by its advisory board. This has the advantage that it regularly re-aligns incentives towards performance, but on the other hand it may give too much power to limited partners, who could unwittingly force a firm to lower budgets below a point where the fund manager is unable to attract qualified and motivated staff.

Common practice is to allocate income and expenses along the lines of capital commitments, typically 99% to investors and 1% to fund managers. Some industry practitioners argue that income and expenses be divided along the same lines as the allocation of capital gains and losses (80% to investors and 20% to fund managers in a fund, with 20% carried interest).<sup>8</sup> A counter-argument would be that the general partner, being under-diversified compared to the limited partners, is exposed to a higher risk level and therefore needs to be compensated accordingly.

### 3.1.4 Carried interest

Despite the major changes in the private equity industry over various cycles, it remains largely uncontested that the fund managers’ main incentive is performance-based through carried interest. Carried interest is calculated either on a “fund-as-a-whole” or a “deal-by-deal”

---

<sup>7</sup> On fees, Bushrod (2003b) commented that at least according to US data, there is no direct correlation between salary and bonus paid and the performance of the fund.

<sup>8</sup> See Flag Venture Management (2003b): “*FLAG consistently raises this term as a point of negotiation, but few funds will consider a change*”.

basis. Now most carried interest schemes are based on a fund-as-a-whole basis.<sup>9</sup> As on a “fund-as-a-whole” basis, on a deal-by-deal basis the carried interest is payable if the rate of return for individual deals exceeds the hurdle rate or preferred return. Usually previous losses and overall portfolio performance are also taken into account. Deal-by-deal carry is often a feature of real estate private equity funds.<sup>10</sup> It is often said that general partners should “*eat sandwiches on the management charges, and eat caviar on the carry*”. It is generally accepted that 20% aligns interests appropriately.<sup>11</sup> Typically, the carried interest is in aggregate and not deal-by-deal, to avoid misaligned incentives. Carried interest can also be tapered, e.g. managers receive higher percentages of carry the greater the out-performance they achieve.<sup>12</sup>

### 3.1.5 Preferred return or hurdle rate

The preferred return—also often called the “hurdle rate”—has become a standard limited partnership term. The rationale for its introduction was to ensure that general partners are only compensated for over-performance (see Maxwell, 2003a). Therefore, the limited partners had a distribution priority equivalent to their commitment (or capital invested), plus the “risk-free” rate of return.<sup>13</sup> Meanwhile, nowadays, the preferred return is usually set at 6–8% without considering the prevailing risk-free rate of return.

If hurdle rates are set too low, they become meaningless as incentives and just create administrative problems. There are also some conceptual issues with preferred returns. General partners are faced with the dilemma of whether to realise an investment over a short period of time to optimise the IRR, or hold on for longer and try to optimise the multiple. The standard preferred return, being based on the IRR, gives incentive to the former, while a multiple-based preferred return gives incentives to the latter.<sup>14</sup>

According to Maxwell (2003a), the preferred return is more confusing than useful: “*In conclusion, although the preferred return is now an accepted standard term, I believe that it has passed its sell-by date. Private equity terms are not ‘writ in stone’ and there is no reason why new approaches should not be considered*”. Maxwell proposes an alternative model that builds on a flexible carried interest schedule—in essence, the greater the multiple, the higher the carried interest—and believes that this aligns the interests better than the classical preferred return.

*In particular, preferred returns may induce GPs to “give up” when the portfolio value drops to the point where raising it above the preferred return is unlikely.*

Covitz and Liang (2002)

While high hurdle rates aim to give an incentive to out-perform, they can also have the opposite effect. Managers of struggling funds can be demotivated if it becomes unlikely that

<sup>9</sup> See Bygrave, Hay & Peters (1999).

<sup>10</sup> See Weaver (2003).

<sup>11</sup> It is not unheard of that a few “star” funds manage to garner carried interest percentages larger than 20% (25% or even 30%). These are exceptions.

<sup>12</sup> See Meek (2004b).

<sup>13</sup> The risk-free rate was deemed to be the yield on a treasury with similar maturity to the weighted average life (6–7 years) of a private equity partnership. During the late 1980s this was in the area of 6–8%. Some investors request that the total commitment should be the basis for the preferred return calculation.

<sup>14</sup> While the preferred return works reasonably well for later stages with only one round of finance, this approach can be ineffective for early stages, with multiple rounds of funding, many of which are subject to milestone payments.

they could receive carried interest. It may also lead to excessive risk taking. Incentive fees are used to reward managers when the fund does well, but there are no punishments when the manager behaves badly. The more risk a manager takes, the greater the upside potential, with little immediate downside impact from losses.

### 3.1.6 General partners' contribution

This conflict of interest related to the excessive risk taking can be reduced or eliminated if the manager has a significant portion of his personal wealth in the fund. Then the manager, being exposed to the losses of the fund, is no longer incentivised to take extraordinary risks or to leave the boat once the carry and the follow-on fund becomes highly unlikely. Typically, investors in private equity funds see 1% as standard and acceptable.<sup>15</sup> Consequently, 1% may sometimes be too low.<sup>16</sup>

To better understand the mechanisms, it makes sense to look at the general and limited partners' relative exposure. For first-time teams and newer funds, where the fund management team has not yet amassed sufficient personal means to invest this much, investors want to see an investment that represents a significant percentage of each team member's net worth. It is certainly a challenge to determine this percentage and requires research and judgement. The general partners contribution to the fund typically is a significant share of their personal wealth, while, although in absolute terms far higher, the limited partners' investment represents a typically immaterial share of the institutions' assets. Consider the following two examples:

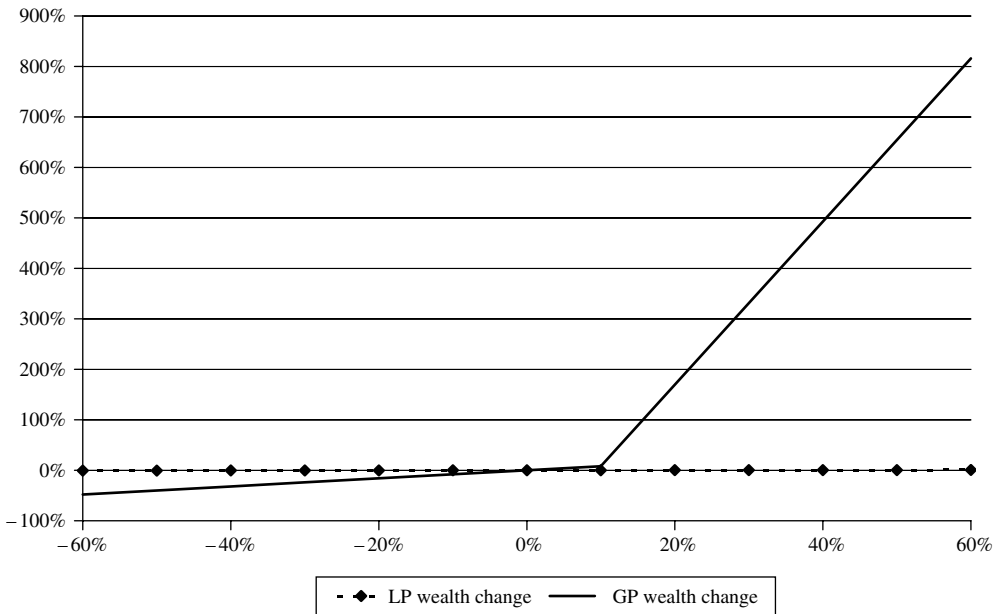
*As one LP put it, having been asked for a commitment to a fund run by two 15+-year veterans from big name VC firms, "These guys were only putting up 2% of their own money. That just doesn't cut it".*

Hellman and Katz (2002)

- The general partners commit 80% of their personal wealth into a fund, while the limited partners' stake represents 1% of their assets under management (see Figure 3.2). While in absolute terms the limited partners profit handsomely from the high performance of the fund, in relative terms the general partners make a "killing" and can increase their own personal wealth dramatically. On the other hand, the general partners get disproportionately penalised for underperformance, as they lose most of their assets and will also find it difficult to raise a follow-on fund under the same conditions. The alignment of interest works in all directions: there is a significant incentive to over-perform, but the general partners are also careful about their own downside protection.

<sup>15</sup> See Bushrod (2003b): "This is usually referred to as 'hurt money', which means it is enough to materially impact the lifestyle of the venture capitalist if it is lost, which in private equity terms means that the fund does not make enough profit for there to be any carry element for the venture capitalist".

<sup>16</sup> See Meek (2004b): "Those that offer to put up the standard one per cent of the fund just because that is the standard, for example, are unlikely to convince investors that they truly believe in the investments they make . . . Adveq's Andre Jaeggi agreed. 'The appropriate level of contribution depends on the fund manager's circumstances. If Kleiner Perkins partners agreed to put in ten per cent of the fund, that's a very significant amount, but it might not hurt the partners as much as a one per cent contribution made by newer players . . . The general partner has to be at risk'. Or, in the words of another investor: 'I'm not interested in what the percentage is. I'm interested in how much it hurts the manager to lose the contribution'."



**Figure 3.2** General partner invests material share of personal wealth

- Compare this to a situation where general partners do not commit any significant share of their personal wealth to the fund (see Figure 3.3). In case of out-performance they, as in the first example, can increase their personal wealth drastically. In the case of under-performance, compared to the limited partners, they are not penalised at all. Regardless of how the fund is doing, in relative terms the general partners are nearly always better off than the limited partners.

*In the history of the world, no one has ever washed a rented car.*

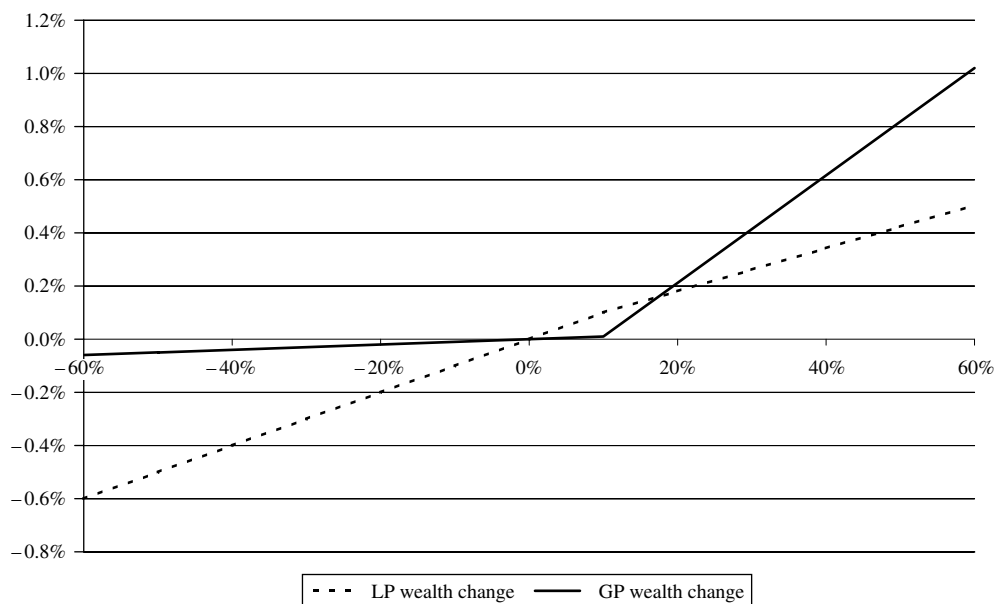
Lawrence Summers

### 3.1.7 Key person provision

If one of the named “key persons” departs the team or sells his interests into the management company, the key person provision allows limited partners to suspend contributions, investment and divestment activities until replacement is found, or even to terminate the fund. Depending on the size, experience and depth of the team, the inability of one or more of the key persons to carry out their duties could have a significant adverse effect on the partnership. Moreover, key person clauses are put in place in anticipation of senior fund managers’ retirement.

While traditional management firms depend on key personnel as well, unlike traditional investments, investors in private equity funds may find it costly or impossible to exit these investments without the key persons, due to the illiquidity. The key person clause is important to ensure that the individuals the investors trusted to invest their capital actually stay around to do so. It is more common and important for private equity, reflecting the importance of judgement and trust in safeguarding these investments.





**Figure 3.3** General partner invests immaterial share of personal wealth

### 3.1.8 Termination and divorce

Limited partnership agreements foresee a “for-cause” removal of the general partner, also called a “bad leaver clause”. Investments are suspended until a new fund manager is elected, and in the extreme the fund can be liquidated. In practical terms, conditions leading to a for-cause removal are difficult to define and determine. In private equity very little can be legally enforced. Especially in venture capital, issues are highly judgemental and taking matters to court carries high legal risk for an investor, as it is very difficult and lengthy to prove any wrongdoing. Consequently, reputation plays a key role in addressing these problems because the market consists of few actors that repeatedly interact with each other. General partners that are removed for-cause may subsequently be unable to raise funds or participate in investment syndicates with other partnerships.<sup>17</sup>

The “without-cause” or “good leaver” termination clause enables the investors to cease funding the partnership with a vote requiring a “qualified majority”—generally more than 75% of the limited partners. The clause provides a clear framework for shutting down a partnership that is not working or when confidence is lost, and is especially important for funds with no track record.<sup>18</sup>

<sup>17</sup> There is a parallel to the argument in Benson (1990) on merchants’ courts, which traditionally had no legal authority and yet were able to enforce compliance with their judgement by the treatment of ostracism, the carrying out of which would put offending merchants out of business: “People turn to the private sector when public police and courts are presumably available because there is a growing dissatisfaction with public sector efforts to mainstream social order”. The author concludes that this pressure can be more effective than the pressure exercised by law.

<sup>18</sup> It is an example for how the pendulum moves back and forth: the general partner’s responsibility gets diluted, as the limited partners’ increased flexibility essentially means stronger involvement—where is the limit? Limited partners simply have neither skills nor incentives for direct investing. Moreover, it goes against the alignment of interests; limited partners will be driven by short-term mood swings of their sponsors and for this reason could either overreact or would not know what to do at all.

*One of the most important decisions for LPs is whether they reinvest in the next fund of a partnership or not . . . LPs have very few governance tools except for exit, i.e. not reinvesting in the next fund.*

Lerner, Schoar and Wong (2004)

### 3.1.9 Distribution waterfall

Exits realised by the fund are distributed according to a “waterfall”. Normally, the limited partners are returned first all the capital invested and fees plus expenses (or sometimes the total commitment). Then they get the preferred return on the investment (hurdle rate), normally compound per annum. This is followed by the catch-up period, during which the general partner receives all or the major share of the distributions. The catch-up period ends when the agreed carried interest split is reached. Thereafter, distributions are shared between fund managers and investors in the proportion agreed in the legal documentation, normally 20% for the general partners and 80% for the limited partners. To little surprise, this mechanism is also not standardised. The interest can be compounded on a quarterly or on an annual basis. Sometimes there is a 100% catch-up, while other agreements may foresee only a partial or no catch-up at all. With a 100% catch-up the limited partners are effectively “out of the money” until the general partner has made a full recovery.

Of course, the simplest and, from the viewpoint of the limited partner, the most desirable solution is that general partners do not take carry until all invested capital has been repaid to investors. But that can take several years before the fund’s team sees any gains and it could lead to demotivation. An accepted compromise is that general partners take lower percentages of early distributions until contributed capital is returned, either distributing the excess to limited partners directly or putting it into an escrow account. Investors often require that fund managers escrow a portion (typically 20–30%) of their carried interest proceeds as a buffer against potential claw-back liability.<sup>19</sup>

Claw-back is a liability triggered when, at the end of a fund’s life and assuming a 20% carried interest structure, the limited partners have received less than the sum of contributed capital and 80% of the fund’s profits. Claw-back is relevant in situations where early investments do well but others later fail; it assures that the managers will not receive a greater share of the fund’s distributions than they are entitled to. Responsibility for payment of the claw-back rests with the persons or entity who received the carried interest distributions. Buyout funds are more likely to be pressurised to incorporate claw-back provision, as buyout funds generally have earlier realisations than venture capital funds. In such a case, the general partner is required to return some proceeds to make the investor whole. According to Bushrod (2003b), approaches to claw-back provisions tend to be more stringent for first-time teams and previous underperformers.

Although any ultimate liability technically does not normally become due until the end of a fund’s lifetime, setting expectations is important. Some funds even return projected claw-back liabilities to investors before they are contractually required to do, to create goodwill with their investors. Alternatively, an annual claw-back review could be foreseen, but it might incline fund managers not to take appropriate write-downs if it means taking money out of their own pockets.

<sup>19</sup> Associated with this is the joint-and-several liability: if a manager leaves the fund and the fund ends up with a liability, such as claw-back to its limited partners, this clause makes the remaining team members responsible for the departed person’s share of the liability.

### 3.2 CONFLICTS OF INTEREST

Consulting activities, previous funds, new fund-raising activities, chairmanships, or personal participation in individual portfolio companies provide a fertile breeding ground for conflicts of interest. Walter (2003) differentiates between two types of conflicts of interest. In private equity funds “type 1” conflicts—*“between a firm’s own economic interests and the interests of its own clients, usually reflected in the extraction of rents or mispriced transfer of risk”*—are usually addressed or mitigated through an alignment of interests. So-called “type 2” conflicts of interest—*“between a firm’s client, or between types of clients, which place the firm in a position of favouring one at the expense of another”*—are more problematic, as fund managers typically engage in a series of activities in parallel.

Conflicts of interest need to be minimised to focus fund manager on the fund. Even if such outside activities are not directed against the limited partners, investors want to ensure that the management team is completely dedicated and that the day-to-day management of a fund is not left to the less experienced team members. There are also inherent conflict of interest issues in so-called captive funds linked to a bank or a financial group. Here the independence of the management team is a prerequisite for securing investment commitments.

In the due diligence not only the expertise but also the objectivity of a partnership’s management needs to be scrutinized. Conflicts of interest are often not obvious and require looking beyond the fund proposal. Even if the current fund is structured to align interests and to avoid conflicts with previous or parallel funds, if market conditions are changing or more interesting opportunities emerge, the manager may find all excuses to neglect the fund.

While investors attempt to reduce such potential for conflicts by crafting appropriate limited partnership arrangements, the interests of fund managers diverge from the interests of capital providers, even with the most carefully considered deal structures. Consequently, only continuous monitoring can help to identify an emergence of diverging interests early enough to prevent problems.

### 3.3 FINDING THE BALANCE

The limited partnership agreement sets the economic incentives and penalties that make the fund managers perform fully in line with their principals’ interests. Fund managers as individuals do well if the funds they manage perform well, and not otherwise. They must establish a favourable track record to raise new partnerships. With poor performance, they will simply be put out of business. There are a series of trade-offs and it becomes clear that for a limited partner an “optimal” fund does not exist. According to Meek (2004b), *“sophisticated investors understand the importance of ensuring that fund managers are correctly incentivised to outperform. They are not looking for private equity on the cheap. Instead, they are looking for a proper and fair balance—a genuine alignment of interest achieved through terms that are appropriate to fund size, type and investment style”*.

#### **Box 3.1: Well-intentioned structures can have unpredictable consequences**

To promote entrepreneurial activities, in 1989 the German government launched the guarantee program for venture capital investments, BTU (“Förderprogramm des Bundeswirtschaftsministeriums Beteiligungskapital für kleine Technologieunternehmen”). To promote the BTU program, the Technologie-Beteiligungsgesellschaft (TBG) of the

Deutsche Ausgleichsbank (now part of the Kreditanstalt für Wiederaufbau) invested as much into the start-up as the private venture capitalist. Moreover, there was a guarantee given by the TBG on the investment: should the start-up fail, the venture capitalist could only lose 50% of its investment, as the TBG was covering 75% of the loss (100% of its own investment and 50% of the venture capitalist investment).

During the decline of the private equity sector after 2000, German venture capitalists became very restrictive in further financing their start-ups. Moreover, they used every opportunity get rid of weaker participations. For venture capitalists it could be more meaningful to let a portfolio company fail than continue the financing. von Haacke (2002) gives the following fictive example to demonstrate how venture capitalists could act in their interest and against the German government's intentions.

On the peak of the bubble, a venture capitalist valued an ICT investment at €4.5 million and invested €1.5 million for a 33% participation with a TBG guarantee. Two years later the company required a further capital round. At that moment, the company's value was just €1.5 million; consequently the 33% participation's value was only €300,000. It would take considerable work, risk and time before the company is back to the original €1.5 million. From a financial viewpoint it made far more sense to let the company fail and get €750,000 back directly from the TBG.

While most German venture capitalists have denied such practices, according to von Haacke (2002), they appear to have been applied. Occasionally entrepreneurs were not even aware of the TBG guarantee. Up to the end of 2001 the TBG paid out guarantees of €58 million. Since the beginning of 2002 the TBG have not given further guarantees, the official explanation being that the German VC industry did not further require them any longer.

The alignment of interests also implies compromises between the parties, as general and limited partners are in a kind of "prisoners' dilemma". Even if limited partners in a difficult fund-raising environment could theoretically negotiate highly favourable terms, it may backfire. For example, if economic conditions change, fund managers have a strong incentive to quickly raise another fund with more favourable conditions, potentially from another group of investors, and not focus their attention on their old fund any longer. On the other hand, even if the general partners can base management fees, etc. on contractual conditions, they are often quite accommodating, as they want to maintain the relationship with their investors for follow-on funds.

Seeking the "right" balance is a continuous process, as the interaction between capital commitments to a fund, value of fund's assets, carried interest, etc. is not obvious. Flag Venture Management (2003b) refers to an analysis that shows that reducing management fees by just 50 basis points can boost net returns to limited partners by 100 bps or more (see Table 3.1). Somewhat surprisingly, this exceeds the impact that investors would realise from a reduction in the carry from 25% to 20%.

As with the other terms, to address the changing economical environment, there are also some innovations in these structures. Meek (2004b) refers to a buyout fund that gives limited partners a choice: either invest according to "standard" terms (8% hurdle, 20% carried interest) or set a 15% hurdle with 30% carried interest. However, that could lead to problems, as limited partners are not in the same position any longer. Financially stronger limited partners that take a significant stake in a fund could theoretically force a more

**Table 3.1** Net return to limited partners as a function of management fees and carried interest

Net IRR (assuming 3 × gross multiple; 100% invested)		Carried interest (%)		
		20.0	25.0	30.0
Management fee (%)	2.0	21.5	20.8	20.0
	2.5	20.4	19.6	18.7

Source: Flag Venture Management.

risky investment style, to the detriment of other investors. This example also underlines the importance of the *pari passu* principle, where the equal treatment of limited partners is seen as best practice.

## Buyout and Venture Capital Fund Differences

Private equity refers to a multitude of investments with varying risk profiles, liquidity requirements and returns. The private equity benchmark database provider Thomson Venture Economics differentiates:

- VC funds that invest in new, i.e. early-stage (seed or start-up) or expansion-stage, companies attempting to exploit new or fast growing technologies.
- Buyout funds that invest in established businesses (generally privately held or spinouts from public companies) that need financial capital for changing ownership.<sup>1</sup>
- Mezzanine funds that invest in established companies (generally privately held and/or below investment grade) seeking expansion or transition capital through the issuance of subordinated debt with warrants or conversion rights to purchase common stock.<sup>2</sup>

The main and most important two distinct spheres of private equity are (leveraged) buyouts and venture capital. They form the bulk of a typical institution's private equity portfolio. In practice, the line between venture capital and buyout, and other forms of private equity,<sup>3</sup> is less clear. The classic argument presented for diversifying between buyouts and VC funds is that they are counter-cyclical, largely representing a balance between "growth" and "value" investing.<sup>4</sup> This is plausible for two reasons. First, buyout funds are mainly debt financed and tend to perform well during depressed public equity market periods, when debt is "cheap". Second, venture capital has the stock market as the main exit route and therefore often shows strong correlation with small cap indexes. Consequently, venture capital would be expected to do better during bull markets.<sup>5</sup>

Historically, buyouts provided more steady returns with an orientation towards minimising risk, while venture capital occasionally gave higher rates of return in certain markets, but also the possibility of higher losses. Investors expect long-term stable returns through

---

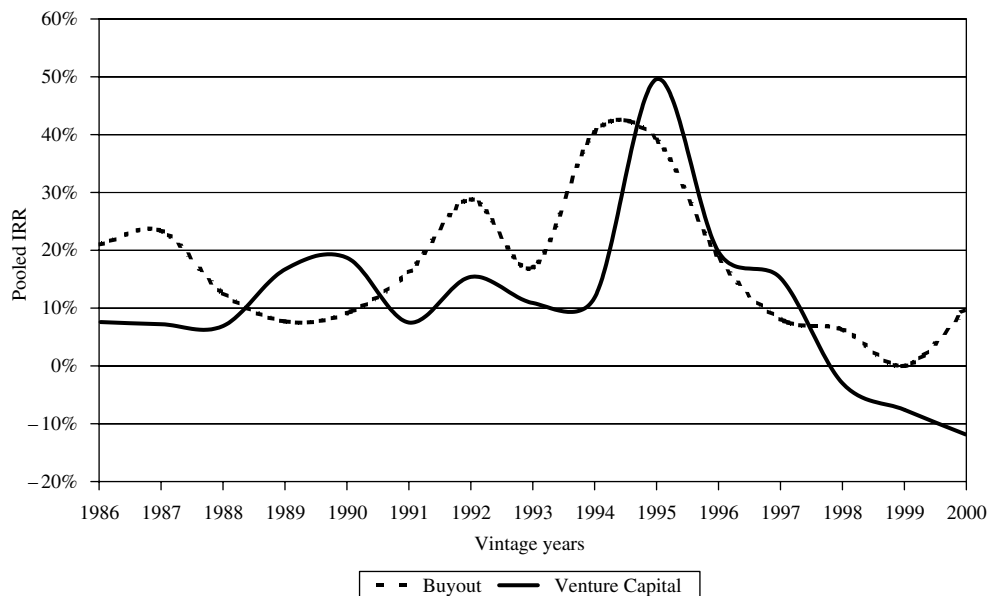
<sup>1</sup> "Buyouts" is a generic term that comprises management buyouts, where the current management acquires the company, management buyins, where new managers or owners come from outside the company, public-to-private transactions where companies are de-listed as a private equity company acquires their shares, or buy-and-build strategies that generates the portfolio companies' growth and, therefore, its value increase, mainly through add-on acquisitions.

<sup>2</sup> Mezzanine financing is half-way between equity and secured debt. While mezzanine financing gives a more predictable cash flow profile, it is unlikely to provide capital returns comparable to other financing forms.

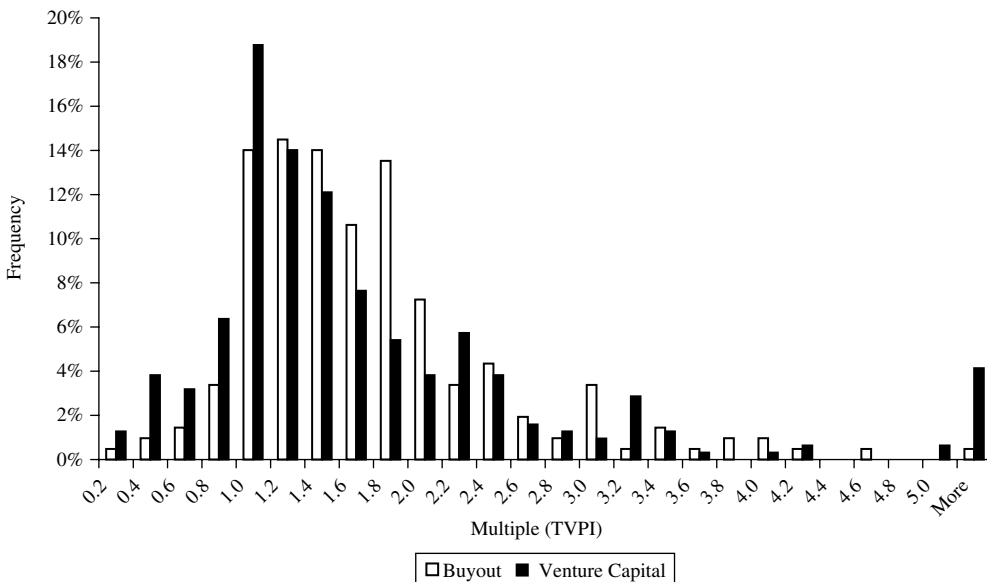
<sup>3</sup> Such as distressed debt or other more exotic forms, such as leveraged venture-leasing companies.

<sup>4</sup> See e.g. Emery (2003). According to Giacometti (2001), however, this is only true in periods of "*dramatic dislocation*" of returns between the two strategies.

<sup>5</sup> The correlation between public equity and venture capital is not direct, as there is a time lag. The investor is taking an option on where the public markets will be in 3 years' time.



**Figure 4.1** European funds—pooled IRR by focus and by vintage year  
*Source:* Thomson Venture Economics (VentureXpert database).



**Figure 4.2** European funds—histogram by focus  
*Source:* Thomson Venture Economics (VentureXpert database).

over-weighing buyouts, while achieving higher returns through some exposure to venture capital.<sup>6</sup>

Venture capital investing involves providing capital to emerging companies with a promising idea, innovation or product, with high growth potential and often active in technology, telecommunications or health care sectors. In general there are two stages:

- *Early stage.* Because of small size and unproven ability to generate profits, early stage candidates are riskier.
- *Expansion stage.* Here companies have already established the technology and market for their product, but require further financing to allow higher, or more rapid, growth.

Venture capital-funded companies typically are not really comparable with traditional financial investments and have characteristics that make the application of traditional portfolio management techniques difficult. These investments are several years away from an exit and are still generally in their cash-burning stage. In buy-outs, portfolio companies are established, have tangible assets, and are normally beyond the cash-burning stage.

## 4.1 VALUATION

As there is limited operating history, and most portfolio companies have never generated profit, the valuation of venture capital investments poses a range of problems. Traditional valuation methods can only be applied to venture capital under “heroic” assumptions and using unreliable information. The valuation of a venture capital investment is mainly based on the appraisal of intangibles, such as the founders’ entrepreneurial skills, know-how, experience or patents. Young companies bear significant risk that cannot be easily quantified, as comparable companies often do not exist.<sup>7</sup> Investments are negotiations between present and new investors, with a focus on ownership dilution. There are relatively few investors in a specific company during the initial period, and there is little or no consensus on valuation and high dependency on one or only few sources of finance. Investment valuation is usually based not on cash flows or earnings but on the expected market size for the portfolio company’s products or the presumed value relative to existing public companies.

Because there is a lack of third-party oversight, venture capitalists may be prone to losses from over-valuation. The value placed on a young company cannot be verified except through future rounds of investment.<sup>8</sup> It may take years to uncover losses generated by investments at over-inflated and unsustainable valuations.

<sup>6</sup> There exist more “rules of the thumb” for determining the private equity allocation best position investors with regard to risk and return. According to Venture Economics, the commitment ratio of buyouts compared to venture capital had been approximately between 3:1 and 2:1 between 1990 and 2000. Because of the costs involved, institutional investors who are looking to put large amounts of money to work into the private equity sector should consider committing 75% of their private equity allocation to buyout funds and 25% to VC funds (source: Giacometti, 2001).

<sup>7</sup> “Risk” in venture capital ultimately is a matter of investor’s confidence. Very often venture capitalists simply pull the plug too quickly; there are also situations where investors nurse substandard companies through, somehow proving that you can make a brick fly if you attach an engine that is strong enough. Sometimes all investor confidence is of no avail: the prime example is boo.com, which quickly burned through \$120 million of capital raised from institutions such as J. P. Morgan, Goldman Sachs or 21Investimenti (see Malmsten, Portanger & Drazin, 2001) and in the end failed spectacularly.

<sup>8</sup> While for later stage private equity the investors’ relationship to the investee may have little influence on the valuation of the investee company, this is clearly not the case for venture capital investments: their realisable “value” is heavily influenced by the bargaining power of their venture capital investor. Only a financially strong investor can sustain longer negotiation periods. A weak VC fund is simply in a worse position to “shop around” for several months while its portfolio burns the remaining liquidity.



**Table 4.1** Buyouts—venture capital comparison

	Buyouts	Venture capital
Main concern	Risk—measurable (mature industries)	Uncertainty—unmeasurable (emerging technologies or markets)
Source of returns	Leverage, company building	Company building, identifying follow-on investors
Valuation constraints	Cash flows projections overlooked by credit lenders	None, often no third-party oversight
Business model	High percentage of success with limited number of write-offs	A few winners with many write-offs
Stage Selection	Stable and mature growth Intensive financial due diligence	Seed, start-up and expansion Limited financial due diligence but extensive sector/product due diligence
Sector	Established industry focus	Cutting edge technology focus or rapidly growing sectors
Success factor Financing	Backing experienced managers Club deals and large investment	Backing entrepreneurs Limited syndication several investment rounds
Sensitivity to public markets	Probably low	Probably high
Monitoring Approach	Cash flow management Financial engineering, corporate restructuring	Growth management Industry know-how, product development and commercialisation

In buyouts valuation risk is limited. First of all, the valuation of portfolio companies is on far more solid ground, and it can draw upon a rich toolbox of accepted instruments for quantitative analysis. The leverage required for the transactions leads to scrutiny from a syndicate of commercial lenders and, often, due diligence by underwriters of a high-yield bond offering. The influence of credit providers eliminates some of the potential risks inherent in the leverage. There will be restrictions on the amount of leverage that provides a corresponding upper boundary on the total valuation for the targeted business.

## 4.2 BUSINESS MODEL

VC funds can only invest small amounts at each incremental funding round. As generally there are few attractive investment opportunities and they are difficult to assess, a relatively high number of investments are done initially. Returns stem from taking large risks to develop new businesses and concentrate efforts on building those companies that can be sold or taken public with a high multiple of invested capital. These few big wins need to compensate for many failures. Venture capital-funded companies can be seen as “work-in-progress”, with intermediate stages of completion. In this respect, they are development projects that cannot be prematurely exited without losing most of the capital invested. By nature, venture capital investing must be a long-term investment activity, which also explains why fund managers impose rigid restrictions on the transferability of interests in their funds.

Because the target universe is larger in the later stage private equity market, there is a continuous deal flow, even for larger buyout funds. Purchasing private companies is possible at lower valuations than for public companies. Large capital requirements lead most buyout firms to make a small number of investments. As the drivers for returns are more complex and varied, there is also a multitude of different approaches, combining divestment of unrelated businesses with financial engineering or with company turn-around and building skills. Buyout managers need to give extensive strategic and business planning advice. They tend to focus on consistent returns rather than rely on the big hits. Consistent wins are only depressed by few failures, but this low probability of loss also limits the upside.

### 4.3 DEAL STRUCTURING

VC funds typically use no debt and gain control of a company over time through a series of equity investments. Return stem from building companies and from managing growth. As a consequence of the problems inherent in the valuation, venture capitalists only do a limited financial due diligence. They typically provide not only financing for building businesses but also industry know-how and management expertise. The investment sizes can be relatively small<sup>9</sup> and are overwhelmingly equity or quasi-equity financed with no or little leverage.<sup>10</sup> To realise investment returns, the focus of their activities is the identification of follow-on investors or the arrangement of “club-deals”.

Buyout managers, on the other hand, conduct an intensive financial due diligence and rely on occasionally sophisticated financial engineering. Consequently, understanding the risks of transactional structures, the operational elements of a company and the operating efficiencies are key. Buyout funds typically use debt financing<sup>11</sup> with significant leverage to purchase of all, or substantially all, of a company’s equity. Assets of the acquired company are used as collateral for the debt, and the cash flow of the company is used to pay it off. Generally, there are few limitations to investment size,<sup>12</sup> as there is a high number of stable-growth and mature companies that can be targeted and opportunities to employ large amounts of capital in these transactions.

### 4.4 ROLE OF GENERAL PARTNERS

There are differences in approach between launching and leveraging a company. While venture capitalists back entrepreneurs, buyout funds deal with experienced managers. General partners of VC funds often play an active role in the companies in which the funds invest, either by sitting on the board of directors or becoming involved in the day-to-day management of these companies. Relevant for the assessment of VC funds are mainly qualitative criteria. Team selection is likely to be the key driver of returns. Investors in funds need to assess how much value general managers can add to the portfolio companies.

<sup>9</sup> Initial stakes in the area of €100,000 are not uncommon.

<sup>10</sup> One could argue that there is implicitly “leverage” through the intensive use of option-like mechanisms and through the fact that there is constrained financing: start-ups are never fully financed and funds do not have the resources to fund all investments.

<sup>11</sup> Own capital is used to purchase part of the equity of a company (e.g. 25–40%) and debt to purchase the rest.

<sup>12</sup> It typically requires significant funding beyond the €10 million range.

In buyouts more people usually analyse and oversee investments. Experienced buyout managers can leverage their expertise in an attempt to turn around under-performing businesses or to improve profitable businesses. They typically engage in hiring new management teams or retooling strategies. In an operating company it is easier to give guidance to a seasoned management team, while in early-stage investments one needs to build and coach the management team.

## Funds-of-funds

The management of a private equity funds investment programme can either be done in-house or outsourced to a specialist. Due to the difficulties and constraints related to the setting-up of an in-house programme, many institutions follow the outsourcing route, which can be either with a dedicated account or via pooling asset with other investors. This so-called “fund-of-funds” route is probably the most common and will be covered in this chapter.

A private equity fund-of-funds is a vehicle that pools a group of investors and uses the capital to assemble a diversified portfolio of funds.<sup>1</sup> Banks, asset managers, insurance groups or specialists in private equity organise such vehicles. Funds-of-funds and comparable structures date back to the late 1970s and early 1980s, but they mainly grew in the 1990s. One factor contributing in the USA to the tremendous growth of this industry was a change in SEC regulation. Prior to 1996, funds were essentially limited to less than 100 accredited investors, while after the change of regulation funds were allowed to raise capital from up to 499 qualified<sup>2</sup> investors. Also, the extraordinary success of US venture capital during these years and a growing number of high net-worth individuals created demand for such vehicles. In 1999, funds-of-funds comprised approximately 20% of all the private equity capital raised in the USA<sup>3</sup> and by 2003 about 160 firms in Europe and the USA managed one or more funds-of-funds.<sup>4</sup>

We present a simplified model for a private equity investment programme that institutional investors either manage in-house or outsource to a fund-of-funds and discuss its structure, its value-added and its costs. For financial institutions willing to take a long-term commitment to this asset class, there will be the question whether the fund-of-funds is not a “wasteful” business model and whether the set-up of an in-house private equity investment programme could avoid the controversial double fees.

### 5.1 STRUCTURE

Funds-of-funds mirror the private equity fund structure and are often set up as limited partnerships, with the general partners managing the day-to-day operations.<sup>5</sup> In return they charge an annual management fee, usually 1.0–1.5% of the committed assets to the fund.

<sup>1</sup> Most funds-of-funds demand a minimum investment of several million Euros, which can be an issue for some institutions that need an exposure to private equity. Especially small institutions, endowments or high net worth individuals and families are often unable to bring up sufficient capital for “serious” investing in this illiquid asset class.

<sup>2</sup> Investors have to be “qualified purchasers” as defined in Section 3(c)(7) of the Investment Company Act of 1940 (generally includes individuals owning at least \$5 m in un-leveraged investments). They must also be “accredited investors” under the Securities Act of 1933: this category generally includes entities with total assets in excess of \$5 million, individuals whose net worth exceeds \$1 million, individual income in excess of \$200,000, or joint income, with the prospect’s spouse in excess of \$300,000.

<sup>3</sup> See Jo (2002).

<sup>4</sup> See Reyes (2004).

<sup>5</sup> Of course, as in all areas of private equity, there is also continuous innovation regarding these structures. See e.g. AltAssets (4 November 2003), “ViaNova Launches New European Fund of Funds With Novel Fee Structure”, describing the strategy to launch a new €500 million European fund-of-funds into a crowded market in the hope that its new fee structure will differentiate it from the competition. To respond to the typical investors’ concerns about the double layer of management fees for funds-of-funds, ViaNova did not charge any establishment costs, annual management fee or carried interest. Instead, the fund-of-funds simply takes a 2% interest in the fund and requires an initial one-off fee equal to 2% of the investor’s commitments.

To align the interests of general and limited partners, general partners typically contribute to the fund. Limited partners have no control over the management of the partnership.

Typically, funds-of-funds charge a carried interest, often in combination with a hurdle rate, so that they only profit once a minimum level of performance has been achieved. They have a 10–15 year term, matching the investment horizon of the targeted funds, which are normally identified during a 3–4 year investment period. The fund-of-funds' layer of fees is in addition to the management fees and carried interest charged by the general partners of the funds. This “double layer” is perceived to be one of the main disadvantages of this structure. Funds-of-funds would have to perform 0.7–3.4% better to compensate for this additional fee level layer<sup>6</sup> but, due to scale economies, investments may end up cheaper compared to an in-house programme.

## 5.2 VALUE ADDED

Some funds-of-funds specialise in certain private equity sectors or geographies, while others follow a more generalist approach. A fund-of-funds manages the following activities, which tend to complement each other:

- *Primary investments* in newly formed limited partnerships. Because of the “blind pool” nature of such investments, the assessment of the fund management team's skills is key.
- Selectively, *direct co-investments* alongside the general partners. This activity requires direct investment experience and skills.
- *Secondary investments* in existing funds. While this is generally a niche activity for most funds-of-funds, in recent years specialists like Collier Capital have emerged that purely focus on such opportunities. As for co-investments, direct investments experience, skills for the assessment of the companies already in portfolio, and quick execution are of importance.

Investors expect funds-of-funds to be able to invest in top-performing funds, either by having access to successful, “invitation only” funds or by identifying the future stars among the young and less known ones. Funds-of-funds add value in several respects, e.g. by:

- *Diversification* and intermediation, allowing for scaling financial resources.
- Providing the necessary *resources* and addressing the information gap for investors not familiar with the asset class through their expertise in due diligence and monitoring.
- Providing *selection skills* and solving the sorting problem between “good” and “bad” private equity investments and giving access to “top” funds.
- Providing the proper *incentives* for investment professionals, exercising a credible threat against fund managers' potential misbehaviour, and improving terms and conditions of limited partnership agreements.

Because a fund-of-funds already has established relationships with funds, one can argue that it is not a really “blind pool” investment. The new portfolio to be built up is likely

---

<sup>6</sup> Jo (2002) analysed 48 US-based funds-of-funds launched between 1992 and 1999 (13 asset managers, 15 banks and 20 independent funds). For asset managers the author found an average carried interest of 3.8% (only 5 of the 13 asset managers charge a carried interest) and an average management fee of 0.85%. For investment and commercial banks, management fees were in the range 0.88–1.25%; 12 of the 15 banks charged a carried interest, average carry was 6.6%; typical was just 5% carry. At the end of the 1990s annual management fees were in the region of 0.8% and 10% carried interest; 5 years later the difficult market environment has brought that down to 0.7% and a carried interest of 5%.

to largely comprise these funds. In fact, funds-of-funds are marketed on either a “partially blind” or a “fully informed” basis. For a “partially blind pool” some but not all of the intended general partnership groups are identified, while for a “fully informed pool” virtually all of the intended partnerships have been identified to the investors.

### 5.2.1 Diversification

Funds-of-funds are seen as “safe havens” for private equity investors. Especially in new technologies, new teams or emerging markets, a fund-of-funds allows for a reasonable downside protection through diversification. Not surprisingly, various studies have shown that, because of their diversification, funds-of-funds perform similarly to individual funds but with less pronounced extremes. To build up a geographically diversified fund-of-funds portfolio, specific knowledge and managers with international expertise are needed. A globally oriented research process needs to be built up to identify regions, search for and evaluate local general partners, and structure contracts with the right incentives and investor protection clauses according to national legislations and regulations.

Smaller institutions have difficulties in achieving a meaningful level of diversification, while for larger institutions investments in VC funds may be too cost-intensive, as the size of such investments is too small compared to the significant administration effort. Funds-of-funds can mediate the size issues by “scaling up” through pooling smaller investors or by “scaling down” by doing one large commitment to a fund-of-funds. Instead of overburdening a large institutional investor with many small investment decisions, one large commitment to a VC funds-of-funds is done.

As Keynes observed, diversification is protection against ignorance. The institutional investor might have built up a specialisation in a particular area but not in private equity. In this case, it would be beneficial for institutional investors to let funds-of-funds invest on their behalf, giving them instant diversification and freeing them from the responsibility of monitoring individual managers. The main benefits of investing through a fund-of-funds are an easy entry into the private equity market, outsourcing fund selection, an increased diversification level, and immediate access to high-quality private equity partnerships.

### 5.2.2 Resources

Through the fund-of-funds route, the investor avoids the burden of research, due diligence, ongoing monitoring, reporting and administration. Often just for this reason the function is outsourced to specialists. Institutions usually lack the expertise and experience and also, as discussed above, the personal risk tolerance for this activity. Investing in private equity funds requires a wide-reaching network of contacts to get access to high-quality funds, a trained investment judgement and the ability to assemble balanced portfolios. Also, the liquidity management (see Chapter 10) is challenging. This demands a full-time team with insight and relationships, adequate resources, access to research databases and models, and skills and experience in due diligence, negotiation and contract structuring. Depending on the overall market situation, access to the quality funds can be highly competitive and pose a significant entry barrier for a newcomer to the market. Funds-of-funds are continuously around, speak the “language” and understand the trade-offs in the industry.

### 5.2.3 Selection skills

Due to their selection skills and industry contacts, funds-of-funds have additional expertise to make informed judgements on these new firms and in identifying emerging starts. Fund managers often welcome funds-of-funds as investors because they have already pooled various investors and are therefore a source of cheaper capital. Furthermore, while individual investors may switch in and out of the asset class, funds-of-funds give private equity funds stable access to funding. A smaller customer base means that a fund manager has to spend less time fund-raising and managing limited partner relationships. From their point of view, funds-of-funds could be viewed as an outsourced sales and customer relationship department. It also has the role as an expert to explain to comparatively unsophisticated investors that the fund – despite apparently “horrible losses” in the early years – is still “good” and just in the midst of its J-curve. Funds-of-funds generally take a hands-off approach to their investing. Because of their expertise, one expects them to be less likely to succumb to “herd” mentality. They are more willing to give the fund managers sufficient latitude to focus on their portfolio companies. On the other hand, if required, they are often better skilled and experienced in restructuring failing funds.

### 5.2.4 Incentives

For institutional investors an in-house private equity investment programme can cause problems, mainly associated with their corporate culture and the inadequacy of their incentives structure. Direct investment is problematic because such institutions cannot offer their employees adequate performance-related pay. While institutional investors do not lack staff with the intellectual calibre to evaluate investment proposal and to structure transactions, generating profitable exits in private equity programmes is very hard work over protracted time periods. Without the prospect of getting “filthy rich” this simply will not happen. For typical conservative and seniority-based institutions like banks, pension funds or insurance companies, a theoretically unlimited carried interest does not fit into the salary scheme. Furthermore, there is a significant learning curve and, without performance-related pay, employees will most likely jump ship as soon as they are competent in the area and understand their opportunities better. The institution will need to start again almost from square one. Moreover, the lack of incentives to take risk and to find value will affect investment decisions.<sup>7</sup>

*... institutional investment professionals are neither compensated nor incentivized for investing in new funds. As such, investing in a new fund that subsequently underperforms is considered to be a more serious error than investing in a well-established firm. If an established firm stumbles, chances are a number of other limited partners made the same mistake.*

Thompson (1999)

This issue is relevant not only for direct investments but also for investing into funds. Also, one way to play safe here is to invest where others do, i.e. to go for brands. Here, it is easier to explain under-performance than for a lesser-known firm. The reward for spectacular performance is typically promotion into other areas or increased managerial responsibility. This is at odds with the long-term nature of private equity investing and can also have a

<sup>7</sup> According to Dr Stefan Hepp from SCM Strategic Capital Management, “Very few asset managers at pension funds are on any sort of performance- or incentive-based pay. So what’s in it for them for taking big risks?” (quoted in Bushrod, 2004a).

negative effect on the important networking in this industry. Conversely, if things go wrong it is likely to have a negative impact on one's career. Instead of "pulling the plug" there will be a tendency to say it is "too early to tell" and hope that the problem can be avoided or at least will only blow up after one has moved on in the profession.

*Not only is less risk more attractive, since there is nothing beyond a "thank you" for phenomenal performance and the potential to lose your job if things don't go well, but it can affect the avenue taken. Geoff Singleton at Hyman Robertson explains: "Fund-of-funds is our preferred route for clients going into private equity. Basically we think the other routes are too difficult. First of all they have to find someone to do it for them internally and as soon as they have learned the business, someone in private equity will come along and offer them a job and the investor will be back to square one".*

Bushrod (2004a)

While in the financial industry ownership and management is typically separated, this is not the case for private equity. Here management needs to take a significant personal stake and is then subject to the same, usually leveraged, risk and reward profile as the other investors. It is the typical *modus operandi* in private equity to align interests and to build long-term commitment. For this purpose, a selected group of complementary but like-minded managers team up as partners, and the incentives structure makes sure that they do their best. Moreover, this is also to a high degree caused by the dynamics of the financial niche market: due to its complexity, long-term nature and illiquidity, private equity does not allow a continuous, objective, precise interim performance measurement. For this purpose, personal exposure of management has an important signalling effect to achieve investor confidence. There are too few completed transactions in a manager's lifetime to be statistically significant, or the transactions are too complex to render a track record fully attributable to one individual. The quality of investment managers becomes apparent only after years—in the case of bad managers often when it is too late. Only ownership and investment by qualified individuals provide an alignment of interests in an environment where high risk and uncertainty need to be taken and borne over longer time periods.

### 5.3 COSTS

Funds-of-funds are often seen as inefficient because of the additional layer of management fees. However, if the alternative is an in-house programme, this argument is questionable. Smith (2000) argues that expenses for in-house teams and management fees charged by funds-of-funds are comparable.

Part of the cost of outsourcing to a funds-of-funds is the carried interest. Whether an in-house programme can work without investment performance-related incentives is debatable. According to Otterlei & Barrington (2003), the annual costs of an in-house team can be significant compared to a typical fund-of-funds. Even with a 5% carried interest charged by the fund-of-funds manager, these authors find that the fees have an insignificant impact on the returns to the mandator. Another argument is that private equity programmes follow a learning curve where, due to the initial lack of experience, institutions first have no other option than to go through a fund-of-funds, then become limited partners in funds, and with increasing sophistication build their own portfolio of companies, either through co-investing or through independent sourcing for deals. This views funds-of-funds as a first step into private equity, which, by avoiding learning curve expenses and by providing access to funds, is probably worth the additional layer of fees.



Finally, for larger institutions, intermediation through funds-of-funds allows them to focus on their core businesses. This advantage outweighs most cost considerations.

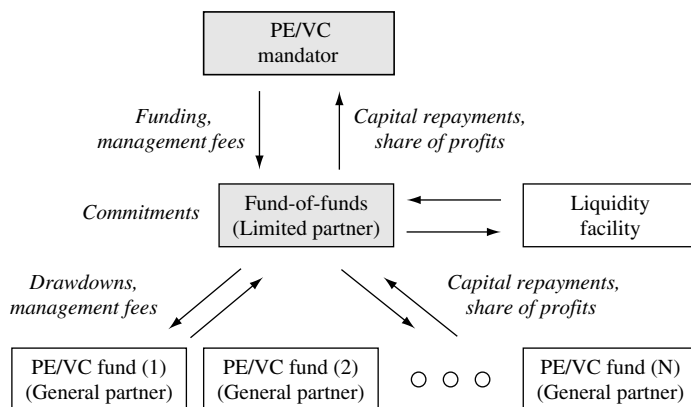
## 5.4 PRIVATE EQUITY INVESTMENT PROGRAMME

Going the fund-of-funds route instead of becoming an investor in funds leads directly to a certain loss of control for an institutional investor. For institutions intending to be long-term players in private equity it can be meaningful to set up an in-house investment programme. The technical questions related to an in-house programme will not significantly deviate from those of a mandate outsourced to a fund-of-funds. For the purposes of this book, we differentiate the mandator of a private equity fund investment programme who, as the principal, provides the resources, from the manager of this programme who, in his agent role, conducts the investments in private equity funds as a limited partner.

The objective of the programme manager is to efficiently invest in assets that meet the mandator's return expectations. The liquidity needs to be managed efficiently to achieve a high total return. There are opportunity costs of holding too high an amount in liquidity, as these holdings reduce a programme's potential to meet the mandator's return expectations. Mandators, because of their larger and more diversified portfolio with other and more conventional asset classes, are seen to be in a better position to pool liquidity. On the other hand, the management of liquidity requires specific expertise that only private equity specialists have.

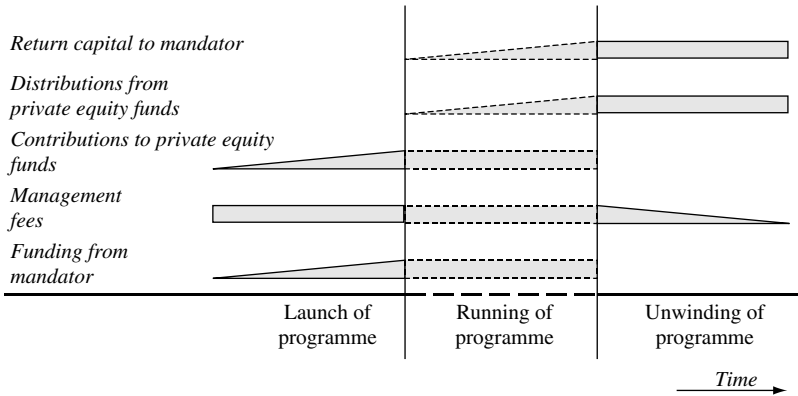
The investment programme is implemented in several, sometimes overlapping, phases—launch, running and unwinding<sup>8</sup>—with associated specific cash flow patterns (see Figure 5.2):

- Funding of the fund-of-funds.
- Management fees.
- Commitments to private equity funds.



**Figure 5.1** Private equity investment programme main cash flows

<sup>8</sup> There are also “evergreen” funds-of-funds with no defined end of the investment program.



**Figure 5.2** Investment programme phases

- Contributions to private equity funds in the form of drawdowns and management fees, and distributions from private equity funds in the form of capital repayments and sharing of profits.
- Return of capital to mandator, also in the form of capital repayments and sharing of profits.

#### 5.4.1 Funding

Funding can be up-front (where all resources need to be managed by the programme manager), just-in-time (where the liquidity is kept and managed by the mandator), or subscription-based (where allocation responsibility for the management of resources changes between the mandator and the programme manager, based on a defined schedule).

- Up-front financing would be more typical for a publicly quoted fund-of-funds that cannot regularly return to the capital markets but needs to raise as much capital as possible when market sentiment is favourable.
- The approach whereby capital is called upon as and when required is known as just-in-time cash flow management. Financing will be requested or drawn down as needed to meet the drawdown requests of the funds in portfolio. The advantage is seen in the fact that there are strong economies of scale in managing pooled undrawn commitments.
- Also possible are subscription-based approaches. Here investors commit to regular (yearly, quarterly, monthly) funding, while capital is flowing back to investors as the fund-of-funds starts to generate returns according to a defined payout schedule.

Deep pocket mandators who are more flexible in providing extra liquidity allow a more efficient structuring of the programme.

#### 5.4.2 Management fees and profit sharing

Funds-of-funds charge an annual management fee (usually 0.5–1.5%, depending on the mandate's size) based on committed capital. Management fees begin to decrease after the

investment period is over.<sup>9</sup> Typically there is also a mechanism for profit sharing, such as a small carried interest of around 5% in combination with a hurdle rate, in place.<sup>10</sup>

### 5.4.3 Investment activities

#### 5.4.3.1 Contributions to/distributions from private equity funds

A closing is reached when a certain amount of money has been committed to a private equity fund-of-funds, and contributions start after closing. Quickly building up a diversified portfolio of high-quality funds is a challenge. The primary attraction of a fund-of-funds is not only the experience and expertise of the management. They also offer the mandator an investment channel into professionally managed private equity funds to put the money to work efficiently. Based on an analysis conducted by Adveq,<sup>11</sup> few fund managers<sup>12</sup> were judged to have an “outstanding” or “solid/good” probability for top-quartile performance. Moreover, such funds are often oversubscribed and only accessible by invitation.

*I personally believe that the maximum you can put to work with quality European venture capital partnerships over a three year period at the moment is around €300 million.*

Fraser-Sampson (2004b)

Occasionally secondary transactions are suggested to accelerate the build-up of portfolio with an acceptable vintage year spread, but that requires specific skills and expertise. As the competition for secondary investment opportunities is as cyclical as the private equity market as a whole, this may not always be a feasible option.

#### 5.4.3.2 Return of capital to mandator

When should distributions be returned to the mandators and by what mechanism, or should they be re-invested in treasury or new private equity fund commitments? As a general principle, capital should be returned to investors if the fund-of-funds has no further added value in the context of managing private equity funds investments. However, capital constraints being one of the drivers of the private equity industry, funds-of-funds are often no exception and are therefore structured as self-liquidating structures.

## APPENDIX 5A

Often funds-of-funds mirror the typical “self-liquidating” private equity fund structure in which realisations are immediately returned to the mandator. On the other hand, typical long-term mandates, like those managed on behalf of insurance companies, pension funds, endowments or development banks (like the European Investment Fund in Luxemburg or the German Kreditanstalt für Wiederaufbau), or publicly quoted vehicles like the Swiss Private Equity Holding, take a more long-term view. Other vehicles are designed as a combination

<sup>9</sup> See Otterlei and Barrington (2003).

<sup>10</sup> See also Jo (2002) for an analysis of management fees, hurdle rate and carried interest of 48 funds-of-funds. To align interests, the fund-of-fund managers usually contribute 1–2% of the resources. Therefore they manage not only the mandator’s money but also their own.

<sup>11</sup> See AltAssets (2003a).

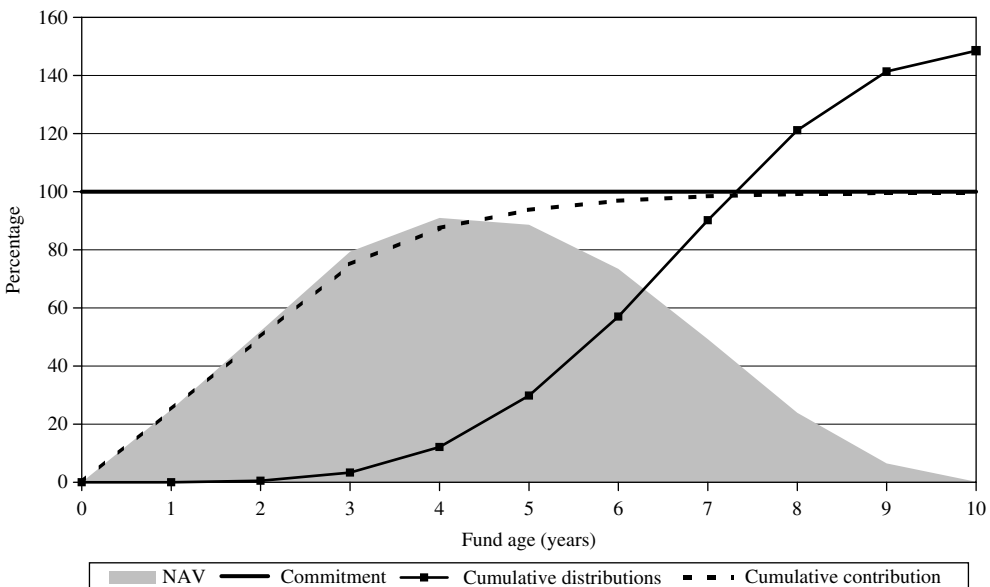
<sup>12</sup> 14% of US and 5% of European venture capital funds; 12% of European buy-out funds.

of structures that foresee reinvestments with payout schedules. Two items are mainly of relevance: the size of resources for investing in private equity funds and the agreed repayment schedule.

Private equity does not guarantee a defined amount back at the end of a fixed period. For the vast majority of private equity funds, neither the timing nor the size of the cash flows is known,<sup>13</sup> but the interaction between cash out- and in-flows follows a pattern. During the first half of the fund's lifetime, contributions exceed distributions. However, distributions often already start before the investment phase is completed, and towards the end of the fund's lifetime the cumulative distributions hopefully exceed the cumulative contributions (see Figure 5.3):

While large institutions can accept the illiquidity of the private equity asset class, some funds-of-funds target private individuals as investors. To ensure at least a limited degree of liquidity, for such programmes payout schedules are defined.<sup>14</sup> Independently from actual cash flows generated by the investment portfolios, defined repayments to these private investors are agreed.

For such a fund-of-funds structure, it is a challenge to meet the repayment requirements while assuring a sufficient degree of capital re-flow from the investment portfolio. To a certain degree this resembles pension fund or saving plan products. In principle, the fund-of-funds needs to tackle issues comparable to an insurer's asset liability management, with varying maturities of contracts, cancellations and acquisition of new subscribers. Conse-



**Figure 5.3** Contribution and distribution patterns

<sup>13</sup> For mezzanine funds and buyout funds that regularly return some dividend or interest payments, the problem is less pronounced.

<sup>14</sup> See also the contractual terms of RWB AG Private Capital Funds. The contract is essentially a savings plan and allows the investors to withdraw funding on an annual basis, but with a set upper cap. The various funds-of-funds managed by RWB AG in Oberhaching have a lifetime of 12–18 years and foresee the reinvestment of distributions stemming from their private equity funds portfolio.

quently a subscription-based approach has its own complexities. Several parameters need to be managed consistently:

- The portfolio management has to assure that the money raised is efficiently put to work. Long-term, medium-term and short-term liquidity management needs to factor this in. There is a feedback loop between these tasks.
- To limit the size of the liquidity buffer, repayment obligations and capital re-flows need to be matched. The over-commitment strategy has to reflect the repayment schedules.
- In case re-flows are in excess of the repayment schedules, the amounts need to be re-invested on a timely basis. This is especially true in the situation where the funds-of-funds are still in the investment modus, can draw down commitments, and have not reached a sufficient level of exposure to private equity funds.
- Liquidity management needs to consider the timing and the cancellation rates for the individual contracts. A contract profile database system is required to allow the matching. The management of a sales-force to acquire new subscription contracts can have an influence on the overall repayment requirements.

It requires complex financial engineering to “marry” the characteristics of private equity funds, with their undefined cash flows, with the fixed payment structure of a payout schedule or with that of a fixed-income structure of a collateralised fund obligation (see Box 20.2).<sup>15</sup> The fund-of-funds manager has to ensure that cash is available to meet the repayment schedule. A liquidity facility needs to be utilised as a buffer if returns from the investment portfolio are delayed or do not reach the anticipated levels.

---

<sup>15</sup> Such collateralised fund obligations achieve the return to their equity investors mainly through the leverage between debt and equity. Consistent returns are achieved through a higher degree of diversification than for unleveraged funds-of-funds that need to avoid over-diversification to achieve competitive returns.

## **Part II**

### **Investment Process**



## Investment Process

In the preceding chapters we have described the private equity market, its structures and its characteristics. The purpose of this chapter is to introduce the broad concepts underlying the investment process for the management of a portfolio of private equity funds that will be explained in further detail in the remainder of this book. There are challenges at all steps of this investment process. Managers, for example, are often drawn to follow fashions in spite of the constraints dictated by their mandates. They also often make the mistake of over-diversifying their portfolios in the name of mitigating risk. Frequently the challenge of managing liquidity proves too much. But more than anything, managers fall victim to distractions by the news, adjusting their investment behaviour accordingly and failing to appreciate the need for a totally disciplined long-term approach to their decision-making. The investment process describes the system or method used by the fund manager to generate profits from a source of returns. This chapter will demonstrate that, frustrating though it is, there is no ideal or optimum investment process. The most appropriate process for a given manager depends on his/her objectives and tolerances for risks. This means that trade-offs are inevitable. The idiosyncrasy of private equity and venture capital—the long-termism, the illiquidity and the peculiarity of its risks—means that a balance must be found between over-diversification and focused manager selection.

### 6.1 KEY PERFORMANCE DRIVERS

The main questions to address in the investment process are the relevance of strategic asset allocation, the importance of selecting superior fund managers, the management of the right level of diversification, and the management of commitments for putting capital effectively to work.

In modern portfolio theory the diversification of a portfolio within the mean-variance framework makes it possible to simultaneously enhance expected returns and reduce risks. Although this model suggests that, for publicly quoted securities, the asset allocation decision is more important than the selection of individual fund managers, we see in Chapter 8 that modern portfolio theory is not fully applicable to a portfolio of private equity funds. Compared to fund manager selection and the management of commitments, strategic asset allocation appears to be of lesser relevance.

*We have no specific allocation policy as I believe that that leads to suboptimal investment decisions. We are also largely sector agnostic, and will look at opportunities across the board in IT, telecoms and life sciences.*

Fraser-Sampson (2004b)



### 6.1.1 Fund manager selection

Due to market efficiency for publicly quoted securities, there are few opportunities to add value through active management. Consequently, the gap between top and bottom managers with—depending on whether bonds or equity—several basis points to low percentages is relatively narrow. The picture is very different for private equity. According to Raschle & Ender (2004), in recent decades the top quartile of US VC funds have achieved returns that were twice as high as the average VC fund. Selecting and especially getting access to so-called “top-quartile” performers is critical. This skill is often declared to be the core competence of private equity specialists and is a key performance driver for generating attractive returns for a portfolio of funds. It is predominantly an “alpha-seeking” approach that characterises private equity investing.

### 6.1.2 Management of diversification

Modern portfolio theory suggests that underdiversified portfolios have higher risk without an adequate compensation in expected returns. However, this framework is not applicable to private equity funds, as such assets—as in a lottery—can show extreme positive returns. While diversification eliminates the undesired variance, it also eliminates the desired skewness.

To capture this high level of “skewness”, investors can consciously choose to remain underdiversified: Hueng & Yau (2004) found that in such cases investors should not hold more than 10 different positions in their portfolio. In the case study in Chapter 9 we take a closer look at the question of trading off diversification against skewness. Assuming that one is confident to be able to select the best fund managers, a risk-taking investor may even theoretically forgo the benefits of diversification entirely.<sup>1</sup>

It is, however, overly simplified to look at diversification from a position’s viewpoint only: there is a problem in getting the committed capital fully invested in portfolio companies. For diversification there are a series of trade-offs and there is no “optimal” solution. There are natural boundaries that implicitly set a “band” for diversification: the full amount cannot be invested in only one fund, neither is a sufficient number of funds around that would allow “unlimited” diversification.

### 6.1.3 Commitment management

Being able to pick funds is certainly important, but we argue that there is more to successful portfolio management. Just looking at the assets invested in portfolio companies does not tell the full picture of a fund’s return. Investors are primarily concerned about the total return on all resources dedicated to private equity. Therefore, a significant part of the capital remains undrawn and, unless put to work otherwise, would generate unattractive public market or even treasury returns only. To keep the programme permanently and fully invested in portfolio companies, so called “over-commitment” strategies need to be applied, where more commitments are signed than resources are available.

---

<sup>1</sup> One could question whether institutions should be risk-averse at all about the comparatively limited allocation of their portfolio to private equity. This niche activity’s *raison-d’être* is to provide excess returns. It is rather the traditional asset classes that have to assure capital protection. For a fund-of-funds entirely focusing on private equity, however, one could certainly expect some degree of risk aversion.

While most investors are worried about potential losses stemming from their fund investments, this does not appear to be the immediate concern. Funds-of-funds certainly may lose investors if they fail to deliver the high returns, but they can go bust—and some have already experienced significant problems in this area—because they have not mastered the management of liquidity required to run such over-commitment strategies. There is anecdotal evidence that in recent years funds-of-funds have been struggling with this issue and that over-commitment strategies have not worked out.<sup>2</sup> The high degree of uncertainty regarding timing of cash flows renders funds an exceptional challenge. As we see in Chapter 10 on liquidity management, investors would need to aim for a high degree of diversification to achieve a reasonably predictable cash flow that would enable an over-commitment strategy.

While simplistic models that ignore the time dimension suggest a low level of diversification, the objective of getting as much of the capital really invested in portfolio companies and minimising the undrawn commitments implies a high degree of vintage year diversification. Erik Hirsch from Hamilton Lane *“certainly ranks the lack of [vintage year diversification] as one of the more serious mistakes people have made in the past”*.<sup>3</sup> It is a difficult task to steer between putting money efficiently to work and maintaining a balance in the portfolio composition and the quality of the individual fund investments. The management of this process is another key performance driver of a private equity funds investment programme.

For this purpose we describe techniques to project fund cash flows. The main methodology is an internal grading system for funds to determine their likely final IRRs. These IRR estimates can be used as inputs for cash flow projections but can also be the basis for discounted cash flow analysis for valuation purposes. In Chapter 13, we propose an approach to tackle the questions associated with valuations, portfolio and risk management of a private equity fund investment programme.

## 6.2 PROCESS DESCRIPTION

The challenge of managing the investment programme is mainly characterised by the trade-off between the return drivers “selection” and “putting capital to work”. Being selective and only investing in few funds of top quality would maximise the expected returns, ignoring the undrawn commitments; being highly diversified would smooth the cash flows and therefore would allow a nearly full investment in private equity, generating a higher total return at the expense of potentially losing extreme positive returns.

Typical investment objectives are to increase total portfolio return or to reduce total portfolio risk, or a combination of both. For the management of a private equity fund portfolio, we need to design an investment process (see Figure 6.1) that can deal with uncertainty as much as it addresses risk.

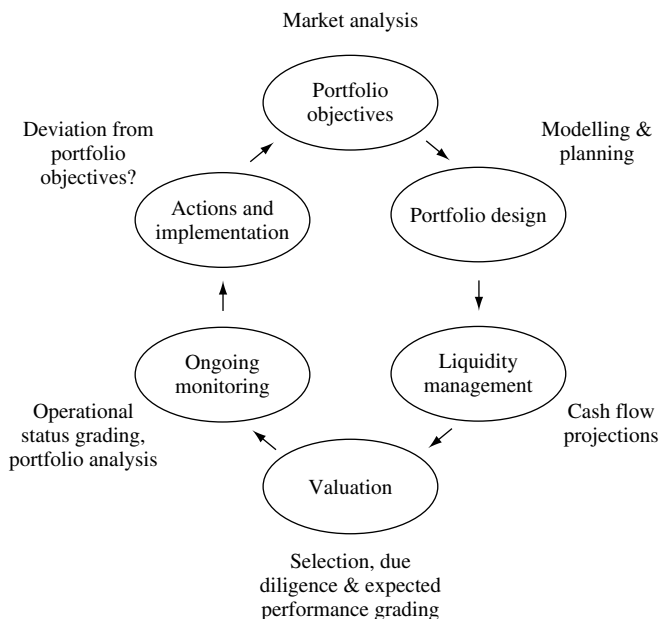
### 6.2.1 Portfolio objectives

The starting point of the investment process is the definition of the portfolio objectives. These objectives will be set by, or need to be agreed with, the mandator. Identifying trends in the

---

<sup>2</sup> See Hutchings (2003) for one of the few documented cases: Private Equity Holding (PEH; a listed fund-of-funds vehicle) “followed a policy of overcommitting to funds. This went sour when exits dried up and funds, rather than returning cash to PEH, demanded more injections of capital. PEH cut the nominal value of its own shares by 90% last week, in recognition of the severe losses of the last 18 months”.

<sup>3</sup> Quoted in Borel (2004).



**Figure 6.1** Investment process

market and how much money can be profitably invested is crucial for the investment strategy and for target setting. The portfolio construction requires the identification of attractive segments and the best strategies. As with the structuring of funds, it is important that the investment programme manager also receives the proper incentives and that his/her interests are aligned with those of the mandator. The result of this analysis is a formalisation of portfolio objectives.

### 6.2.2 Portfolio design

Based on these objectives, the programme is structured and the portfolio is designed. Modern portfolio theory provides the theoretical basis for investors' acceptance of alternative assets in general. Adding non-correlated assets, such as private equity, to a portfolio of publicly quoted securities can improve the portfolio's risk and return characteristics. However, this claim may be exaggerated. Barber & Zage (2002) argue that "... *there are more similarities between public and private equities than differences, and certainly more similarities than many private equity practitioners often assert*". The inefficient valuation of private equity might not only simply mask the natural correlation between public and private equity but also blur the risks. To quote *The Economist* (2004b), to "say that private equity is less volatile and thus less risky is a bit like saying that the weather does not change much when you stay inside and rarely look out of the window".

Instead of building on the modern portfolio theory's paradigm of correlations between various asset classes, in Chapter 8 we describe the best practices for structuring portfolios of private equity funds, namely the top-down, bottom-up and core-satellite approaches, and the rationale for naïve diversification.

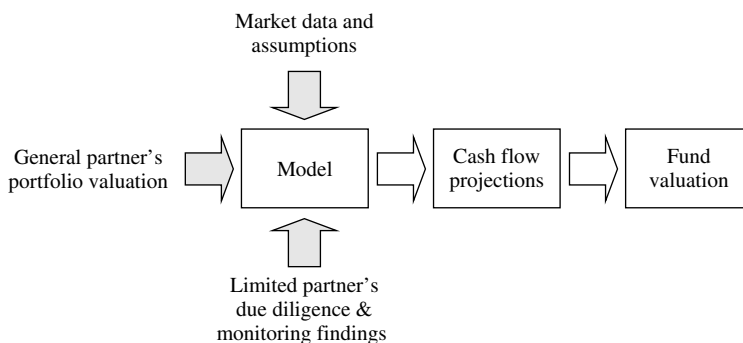
### 6.2.3 Liquidity management and valuation

We have identified liquidity management as one of the key performance drivers, and in Chapter 10 we describe various approaches. We see a link between the need to reliably project cash flows for resource optimisation and the ability to fairly value the portfolio. In a recent discussion on IFRS fair-value treatment for private equity funds, an anonymous auditor suggested—slightly provocatively—that there be a debate on the sense of the whole exercise: *“how much money should be invested in valuation when private equity is at the end of the day a cash-flow business? Should this money—investors’ money—not be spent on better due diligence and deal monitoring?”*. In our eyes, a fair valuation is the by-product of a well-run portfolio management, rather than the end in itself often perceived.

If you can reliably forecast, you can also determine a value. The reverse is not necessarily true. Even if one can get a price for an asset, the range of possible outcomes may be too wide. Valuations – especially consensus opinions on “fair” values – often cannot be a basis for forecasts as projections require in-sights that are either not known or not agreed.

We approach the valuation issue by analysing scenarios for cash flows going into and being generated by the private equity fund. In line with the perception that fund managers are key, we argue that the valuation of a fund mainly depends on the proper alignment of interests, their skills and their intentions. Essentially the relevant parameters for the valuation model are derived from private equity market comparables in the form of a grading-based benchmarking. Introduction of this Grading-based Economic Model (GEM) in Chapter 13 raises a series of other questions:

- To value a private equity fund, these cash flow projections need to be discounted. The question is, what discount rate should be applied or, to put it into another way, what returns do investors expect from this asset class? As we explain in Chapter 17, the answer to this question is not clear-cut.
- Accessing “top-quartile funds” is generally seen as key to successful private equity investing. Consequently, investing in any fund not top-graded does not appear to be meaningful. However, there are good reasons under which less than top-graded investment might be undertaken (not least because it is extremely difficult to pick and get access to a top-quartile fund). The obvious ones are development-oriented and “strategic” purposes. But interestingly, entirely return-focused investors, for whom such motivations are irrelevant, also have to undertake such investments because they carry a real option value and protect



**Figure 6.2** Fund cash flows and valuation modelling process

the portfolio of private equity funds in an uncertain environment. This aspect will be explained in Chapter 22.

### 6.2.4 Monitoring

For a limited partner, monitoring is not only related to the specific fund investments, but also needs to consider the overall composition of the relationships managed. On an ongoing basis limited partners need to monitor the composition of their portfolio, including identifying trends within the private equity markets and tracking their peer group's allocations to private equity.

Analysing concentration across all partnerships in the portfolio, e.g. by industry, stage, geography, groups, vintage years and cross-holdings between funds, provide relevant insights. Stress tests can give early warnings signals and increase the transparency of the portfolio. Tracking overall commitment level, contributions and distributions, return on investment to date or expected return on investment are also important for portfolio management. Identified over-exposures should result in refocusing investment objectives. Severe imbalances could also be mitigated through active portfolio management.

At the individual fund level, compliance with contractual terms and style need to be tracked. The ongoing monitoring and review of investment vehicles for adherence to objectives and guidelines leads to portfolio management decisions. In Chapter 18 we introduce the “operational status grades” that complement the expected performance grades and that are used to manage the monitoring intensity.

Monitoring is based on regular meetings with all parties involved, tracking planned vs. implemented strategy, analysis of fund financial, investment, valuation and divestment information, analysis of relevant market trends, individual investment and portfolio risk, performance measurement, benchmarking, assuring continuing legal and tax compliance, etc. Monitoring is also relevant for liquidity planning. Through quarterly calls, information—on expected drawdowns, projected uses, will 100% be drawn, should the fund size be reduced?—is gathered for cash-flow projections. Finally, monitoring results form the basis for reinvestment decisions.

### 6.2.5 Action and implementation

Co-investing, secondary transactions and restructuring of funds are ways of actively managing the portfolio. The main purpose of fund restructuring is to stop value destruction rather than creating an upside. A case study in Chapter 19 will explain this in more detail.

Active management at the portfolio level can be done through a sell-off via secondaries or through securitisations. We explain both concepts in Chapter 20. In practice, this toolset can only be applied with limitations, as rebalancing the portfolio through buy-and-sell transactions can be too expensive and limited by the relative scarcity of opportunities to transact. While secondary sales are often at a loss, potentially profitable acquisition of “second-hand” positions opportunities are scarce and difficult to identify. Securitisation needs very specific skills and a certain critical mass to attract the attention of the arrangers and potential investors. The obligations are difficult to place in the market and are expensive, as they normally require insurance wraps and ratings.

## 6.3 RISK MANAGEMENT

The approach to risk management for a portfolio of private equity funds rests on the pillars measurement, control and mitigation.

### 6.3.1 Risk-measurement framework

When discussing return expectations and risk of any investment, the starting point is a proper valuation of an asset. There is a difference between an accounting rule-based valuation approach and the economic substance of a fund. Modelling the economic reality as closely as possible is key to efficient management. Typically funds are valued by valuing every single portfolio company individually, aggregating these valuations to a portfolio value and, finally, by calculating the investor's respective share in the fund. In Chapter 11 we demonstrate that this approach does not reflect the economic reality from the viewpoint of the investors into the fund.

A private equity fund investment has characteristics of debt and equity, and both the standard credit and market models in the context of the New Basel Accord (as explained in Chapter 7) are difficult to apply. Private equity funds are essentially marked-to-model, through a discounted cash flow analysis to determine the economic value of a fund as the basis for a risk assessment.

### 6.3.2 Risk control

Theoretically, risk can be controlled quantitatively, by adjusting the returns for risk in the way that the financial markets price risk. However, there is no efficient risk-adjusted pricing for primary private equity fund investing, as risks in this asset class are not well understood. The lack of data, the blind pool nature of the investments, and the fact that the whole universe is one of the highest risk categories make differentiation and quantification of risks difficult. For buy-and-hold investments, the quality of the asset determines the returns to the investor. Within the private equity universe, we can only use the non-quantitative approach to controlling for risk by constraining managers to equal-risk assets within or with the same risk as their peer group. It is neither possible nor meaningful to adjust for risk so long as the investments are restricted to institutional quality private equity funds. Therefore, being highly selective is the typical approach to fund selection. How the cut-off is set depends on what is the accessible universe and on the portfolio objectives.

#### **Box 6.1: Risk-adjusted pricing**

How should a "beta" be defined within the private equity funds universe, such that beta can be reliably quantified for individual portfolios and such that expected returns are clearly a positive linear function of such a beta? This question is relevant for quantitative risk management, as it allows adjusting the fund's ex-post return to reflect the market's "price of risk". Without such a mechanism risk taking will not be adequately rewarded. Unfortunately this is not well understood for private equity in general.

For primary investments into funds, an efficient risk-adjusted price setting (comparable to high-yield bonds, where—at least in theory—the greater the risk, the higher

the interest rate) does not exist.<sup>a</sup> All primary positions are bought at par (i.e. without premium or discount) and there is no pre-defined coupon payment but only an uncertain performance and a pre-defined cost structure. While fund structuring and management fees are occasionally revisited, the variations are insufficient to cover for risks.<sup>b</sup> For such a blind pool investment the uncertainty does not allow a full risk adjustment in pricing. It is more an industry-wide adjustment of terms driven by currently prevailing market conditions, rather than a differentiated pricing mechanism. For primary fund investments the costs are comparatively “standard” and the investor either does or does not believe that the fund will give an adequate return. To illustrate the point, as a real-life example of two funds looking for investors in 2003:

	<b>Fund A</b>	<b>Fund B</b>
<b>Description</b>	First-time fund focusing on venture capital investments in the media sector	Follow-on mid-stage generalist buyout fund
<b>Team</b>	First time team with no venture capital and limited sector experience	Experienced management team with series of exits and previous fund IRRs in the first quartile
<b>Geographical orientation</b>	Regional fund based in and focusing on Southern Europe	Based in the City of London, mainly investments in the UK
<b>Fund size</b>	€30m	£100 m

One may argue about the upside potential of these two proposals, but conventional wisdom suggests fund A be the more “risky” proposition. With life-time and other terms and conditions nearly equivalent, the costs to the investors in these cases were mainly driven by management fees and carried interest:

	<b>Fund A</b>	<b>Fund B</b>
<b>Management fees</b>	2.5%	1.75%
<b>Carried interest</b>	20%	20%

To make the two proposals comparable, we calculated the so-called “break-even IRR—the minimum return a fund’s investee portfolio would need to generate so that the limited partners would recover all invested capital and expenses related to the fund. In the case of fund A, this break-even IRR was approximately 7%, while in the case of

<sup>a</sup>For secondary transaction, however, premiums or more often—discounts are applied. Here even for low quality investments, profits can be made.

<sup>b</sup>See Peninon (2003): “One of the most important points to bear in mind is that there are certain features of private equity that are intrinsic to its success and therefore should not be revisited. The fund structure used by private equity firms is entirely appropriate for mid to long-term investments in non-quoted companies. By definition, such investments need time—whether you are talking about a high-technology start-up or a buyout in a more traditional—and a satisfactory exit environment to allow for value creation . . . Investors commit to a 10-year partnership and they should not re-visit their commitment to a fund on the basis of short-term performance. Those affected by policy changes on the asset class or temporary over-exposure on private equity as a percentage of total assets can go to the secondary market”.

fund B it was below 5%. Therefore, fund B, the “institutional quality” proposal, is actually “cheaper” than the more “risky” fund A.

Fund A was looking for investors during a “flight-to-quality” period in private equity. It could not raise its capital “at a discount”—with this small fund size the management fees barely covered the associated costs. Fund B’s team received more than three times as much as annual compensation. Consequently, to the great distress of the team, fund A eventually did not close. In a different market environment it might have found investors who would have pursued this opportunity may be as a niche strategy or for other reasons, some of which we will discuss later on.

To sum up, the private equity fund market cannot differentiate precisely between the amount of risk in different industry and geographical sectors, and only can give broad differentiations, such as between buyout or VC sub-benchmarks. Within the institutional private equity asset class, traditional quantitative measures like the beta cannot distinguish between stable and reliable differences in risk and therefore investors need to apply judgement.

### 6.3.3 Risk mitigation

In principle, one can mitigate risks by choosing to avoid, to support, to control or to transfer them. Risk avoidance, or significant changes in investment proposals with special contract provisions, is the most commonly used approach in private equity. By rigorously weeding out inferior proposals, investors hope to minimise risks.

Why can risk-taking not be avoided entirely? One reason is that the supply of institutional quality funds is insufficient to meet industry demand and the number of “top funds” with a verifiable track record is lower than eventually perform in the first quartile. Also, an index-tracking passive investment approach is not possible in this illiquid market.

Many risks in private equity need to be assumed. A possible adverse impact can be mitigated through diversification or controlled through monitoring. On a fund portfolio level, risk transfer mechanisms, such as overdraft facilities, etc., are used in the context of the liquidity management, as this is mainly related to “traditional” instruments. Securitisation is another risk transfer mechanism. However, this is a financial engineering technique that is generally only applicable on a portfolio of funds level. For the private equity investments themselves, a risk transfer is difficult to implement. On the individual portfolio company level there are occasionally guarantees, as provided by the Société Française de Garantie des Financements des PME in France, or the scheme run by the German TBG (since abandoned, see Box 3-1), but they are state-sponsored arrangements.

*... we can conclude that a third of the total buyout capital raised over the last five years is residing with less than two dozen managers, i.e. about 10% of the buyout investment manager universe. The equivalent number on the venture capital side is that about 15% of the capital raised over the past 5 years is residing with less than two dozen managers, i.e. about 5% of the venture capital investment manager universe of a reasonable investment grade.*

Raschle (2002)

Generally, risks cannot be quantified to a degree that allows the application of the sophisticated risk-transfer tools used elsewhere in the financial industry. Some degree of risk sharing can be achieved through the relationship with co-investing limited partners. With their financial strength they can step in when other investors are defaulting. They can help to address



operational issues and may even lead to reduced expenses through sharing of monitoring efforts. They impose market discipline and lead to higher predictability, as follow-on funds with the same managers can be closed quicker.

The application of these strategies reduces risks, but does not eliminate them.<sup>4</sup> In the context of private equity we are faced with the problem that it is comparatively straightforward to identify risks, but a risk management, in the sense of taking actions to reduce or eliminate risk, is often either too costly or not even possible.

## 6.4 TACKLING UNCERTAINTY

Private equity funds are operating not only in a risky but also in an uncertain environment. Uncertainty is about unidentified or non-measurable risks and opportunities. Consequently, an investment process needs to be designed to have the ability to adapt to a changed environment. Because risks cannot be quantified precisely and because they are even unknown, the risk-and-return relationship can only be managed with simplistic methods.

### Box 6.2: Risk and uncertainty

Economists typically differentiate between “risk” and “uncertainty”. Risk exists when a probability based on past experience can be attached to an event, whereas uncertainty exists when there is no objective way to determine its probability. In efficient markets there is little differentiation between risk and uncertainty, as uncertainty is practically the same for all participants. In private markets, however, investors are exposed to different degrees of uncertainty. Measurement of events and their chances turns uncertainty into risk. For private equity it is difficult in practice to draw a line separating risk and uncertainty, and most of the time the distinction is not made.

Because of the length of time it takes to achieve realisations, we are facing problems when trying to quantify the risks in private equity. Due to the opaque nature of the industry, not all outcomes are known. Information is hard to get hold of, and the quality of data is generally very poor. Especially in venture capital with fast moving technological changes, newly evolving business models, short boom-to-bust-periods and long investment periods, it is highly difficult, or even impossible, to systematically collect data that allow the establishment of patterns with any statistical significance.

Nevertheless, there are significant “assessable” or even measurable factors in private equity, and much more is known about events and their chances than is typically perceived. Therefore, we believe that a clearer differentiation between risk and uncertainty can be a useful tool for the management of a private equity investment programme. Experts can put lessons learned into a new or changed context and extrapolate from their experiences. While a precise quantification is, except in very specific situations, nearly impossible, experts can associate experiences and opinions on various dimensions with categories for return expectations. For these categories a rough approximate quantification can be undertaken.

The higher the uncertainty is, the more robust are discrete rating techniques. They lack precision, but “*mathematically precise models might be precisely wrong*”, because of being used in the wrong context of the intrinsic assumptions and approximations used.

<sup>4</sup> For a more detailed discussion of risk management for alternative assets, we recommend as an example Jaeger (2002).

Particularly structured qualitative assessments can overcome limitations of quantitative models to arrive at statements about the future (see Troche, 2003).

As significant chances are associated with the uncertainty, it makes sense—and even cannot be avoided—for a private equity investment programme to make investments in funds that, based on this grading, have in the past demonstrated a higher risk than others. In an innovation-oriented industry there will be diverging views on sector developments and consequently two investors can come up with an entirely different forward-looking assessment. However, we suggest that such investments should only be done within a framework of a set “uncertainty budget” based on a structured assessment of the risks historically incurred for funds with comparable characteristics.

**Table 6.1** Risk–return management under various degrees of uncertainty

Certainty	Risk	Uncertainty
Known Plan and implement	Probabilistic Measure, analyse, determine ranges	Unknown and false “knowns” Monitor, learn, adapt

There is not only a range of equally meaningful scenarios for the futures but typically true ambiguity: unforeseeable technological breakthroughs have the potential to change the competitive landscape entirely, consumer tastes can alter significantly, or new opportunities emerge. Faced with this level of uncertainty, in the words of Courtney, Kirkland & Viguerie (1997), *“it is critical to avoid the urge to throw up your hands and act purely on instinct”*. These authors suggest that the situation analysis be highly qualitative and the managers need to catalogue systematically what they know and what it is possible to know.

**6.4.1 Reducing uncertainty**

The best way of dealing with uncertainty is, of course, to reduce it as much as possible. In efficient markets there is no differentiation between risk and uncertainty, and uncertainty is therefore essentially the same for all participants. Uncertainty also offers significant opportunities to do better than others in exploiting market inefficiencies. Reduction of uncertainty comes at various levels of the investment process. Uncertainty can be reduced through research, due diligence and monitoring, but there are limits, as information collection is costly and resource-intensive.

As with risk, also under uncertainty avoidance is often best. In private equity, not everybody is exposed to the same level of uncertainty; situations should be avoided especially where expertise compared to others is lacking. Therefore, a simple approach to dealing with uncertainty is to use expertise to weed out clearly inferior proposals or proposals that do not fall into the area of expertise.

**6.4.2 Strategies under uncertainty**

If uncertainty cannot be avoided or reduced, main strategies under uncertainty need to mimic biological systems that, with evolution and a comparatively simple set of rules of behaviour, have found mechanisms to survive and prosper in changing environments. In Chapter 22

we discuss the private equity industry as an “ecosystem”, as certain structures of the market resemble biological systems that have found mechanisms to be successful under continuously changing conditions.

#### 6.4.2.1 Evolution

A series of authors suggest a Darwinian nature of the industry.<sup>5</sup> A changing environment, such as obsolescence of technologies, can result in the failure of funds, while “strange animals” can evolve into “dominant species”. While this cannot be a discussion of the theory of evolution, it makes sense to take a closer look at ecosystems<sup>6</sup> that, with evolution, have found a mechanism to tackle uncertain and changing environments. According to van der Heijden (1996), living systems are continuously directed towards the dual objectives of survival in a hostile environment and self-development in a benevolent environment. Most actors in private equity have developed a way of acting in a market place aimed at their own survival and development. Therefore, a parallel to living systems can be drawn. In most domains of long-term strategy, uncertainty dominates and the evolutionary view comes to the fore. In the private equity market a series of features prevail that let us assume that these structures allowing evolution are not coincidental but rather the results of environmental pressures.

It is not far-fetched to describe the private equity fund market as an ecosystem—living species in an uncertain world that are in an evolutionary fight for survival. An “ecosystem” is a system whose members benefit from each other’s participation via symbiotic relationships; it is a term that originated from biology and refers to self-sustaining systems. The members of many species of living things are divided into two or more categories that rely on each other to reproduce. As we indicated in Chapter 2 on the private equity market, limited and general partners could be seen as symbiotic partners that rely on each other to maintain their positions in the market place. The mechanism of evolution is mainly explained by the principles of “survival of the fittest” and by mutations.<sup>7</sup> Evolution occurs not in individuals but across populations, with new adaptations, or experiments, constantly emerging. A portfolio of funds could be seen as a “species” whose survival needs to be assured even if individuals fail and “die”.

Living systems are usually defined as systems capable of evolution by natural selection.<sup>8</sup> Their main characteristics are responsiveness to external stimuli, growth and reproducing with a passing on of hereditary information.

- Being responsive to new developments in the market is key, especially for venture capital that is focusing on innovation. The competition in the market requires continued “courting” for investors and responding to the monitoring exercised by the limited partners. To raise new funds, specialisation in certain niches can be helpful.
- Growth is what everybody is hoping for, but there are limits set by size and age. Growth is mainly through reproduction by repeat successes: generating a series of follow-on funds,

<sup>5</sup> See e.g. Callan Associates (2003). Seeing the venture capital fund market as an ecosystem and suggesting evolutionary processes does not, of course, fully conform with Darwin’s theories. The mechanisms are closer to Lamarck’s ideas on evolution. He suggested that everything acquired or changed in the organization of an individual during its lifetime is preserved in the reproductive process and is transmitted to the next generation. The offspring then adapt from where the parents left off, enabling evolution to advance.

<sup>6</sup> In ecology, an ecosystem is a community of organisms together with their environment, functioning as a unit.

<sup>7</sup> We use a qualitative scoring (see Chapter 15) to measure the fitness under current market best practices or the degree of mutation, respectively.

<sup>8</sup> For a fund-of-funds “extinction” comes in various forms—investors withdrawing from the private equity investing and taking the programme into run-off or pulling the plug entirely.

possibly with increasing size, and having a number of funds managed in parallel—although this can easily result in “imperial overstretch”.

- Spawning off of new funds is typical for the industry. The recipe for success is passed on to the new team and is applied in new market niches. Reproduction mainly happens in two ways: through subsequent funds or through new teams, passing on the firm’s “genetic fabric” of networks, experience, methods and processes. Typically this is accompanied by “mutation” in the form of specialisation and differentiation. A mutation is a “heritable change in genetic material” and does not have to be random. It is to be seen as a new experiment.

In fact the limited partnership structure appears to enable an evolution due to its adaptability to changing environments and, to some degree, has sparked a “Cambrian explosion” in the development of the alternative assets industry.<sup>9</sup>

#### 6.4.2.2 Simplicity

Bookstaber (1999) suggested an extremely coarse risk-management structure that ignores significant information about the environment. Although sub-optimal for any one environment, such a coarse and less complex approach is better suited to a wide range of changing environments and may be the best long-term strategy. Certainly the “resolution” of the system will not be high. The aim is rather being consistent in the approach. Further approaches for dealing with uncertainty are:

*This same pattern of behavior—using coarse decision rules that ignore valuable information—appears in other species with good track records of survivability.*

Bookstaber (1999)

- As the environment is continuously changing, it is not possible to contractually address all eventualities and to define procedures that cover all possible scenarios. Instead, contracts are structured with a reduced set of rules, aiming to achieve an alignment of interests so that, at least theoretically, fund managers can be given a high degree of autonomy. Funds are given some degree of flexibility to adapt to changed conditions.
- As in all ecosystems, speed can be a survival strategy. Systematic monitoring and looking for early warning signals can enable a timely reaction.
- Regarding the management of diversification, investors need to employ comparatively unsophisticated tools, such as “naïve diversification” instead of the “optimal” allocation desirable from a modern portfolio theoretical viewpoint. Because figures on correlation are either imprecise, unreliable, unstable or not available at all, portfolio construction aims to assure a high degree of independence between the funds through having clear diversification dimensions that minimise correlations.
- Instead of being able to rely on public pricing figures for valuation purposes, models are mainly built on measurement against peer group universes, with broad return bands that can only be approximately right. The “resolution” of such an approach will be limited but nevertheless allows a differentiated behaviour.

<sup>9</sup> The Cambrian Period, 540–490 million years ago, marks an important point in the history of life on earth; it is the time when most of the major groups of animals first appear in the fossil record. This event is sometimes called the “Cambrian explosion” because of the relatively short time over which this diversity of forms appears.

### 6.4.2.3 Experimentations and real options

As Beinhocker (1999) pointed out, in the face of uncertainty, the robust strategy is “betting on every horse”. Competitive environments are often difficult to foresee—especially with technical innovation, it is inherently difficult to predict how they will behave. Past patterns of behaviour are not always reliable guides to the future. Herding of mainstream seeking investors creates opportunities for those who try to differentiate themselves. If there is no experimentation, funds do not continue to raise a follow-on or they collapse, old funds lag more and more behind the top teams. Here the portfolio cannot evolve with new developments and it stays frozen.

Moreover, a limited partner’s investment decision needs to reflect not only the investment value of the fund but also its real option value. In Chapter 8 we take a look at how to design a portfolio of private equity funds and at possible strategies to exploit the characteristics of this “ecosystem”. The real options associated with investing in a private equity fund appear to be a comparatively under-researched area. For the management of this deviation from mainstream investing, we propose in Chapter 22 an “uncertainty” budget.

## Risk Framework

In June 2004, the Basel Committee on Banking Supervision published the final text of Basel II, which defines how much extra capital banks must set aside when they invest in private equity. The proposed new rules made it more expensive for banks to invest in private equity funds. The exact treatment of this asset class is not yet fully clear, as private equity is not very high on the Committee's agenda. As the chairman of BVCA, Margaret Chamberlain, commented, *"from the discussions I've had with our retail banks, their prime concern will be how it affects their largest investments: their retail and commercial loan books . . . investment classes that represent a small part of their capital, like private equity, are at the bottom of the pecking order"*.<sup>1</sup>

The potential quantitative impact aside,<sup>2</sup> how do private equity funds fit into the standard framework of risk assessment under Basel II? As such funds do not default, they do not fall under the credit risk framework. On the other hand, market risk is also not applicable, as daily quoted prices to compute a value-at-risk (VaR) do not exist for private equity funds. As we will see in this chapter, the choice of an appropriate risk assessment method for private equity funds under Basel II is unclear. We conclude that, for an investor, a private equity fund's "economic value" and the associated measures of risk are of more relevance. However, before discussing this, we take a closer look at the question of market values for private equity funds.

### Box 7.1: Independent risk management function

Compared to other asset classes, risk management for private equity funds is on "shaky ground", as data is relatively old and of too poor quality to base individual investment decisions on precise quantitative results. Moreover, the dynamics and structure of the private equity market is continuously evolving. Therefore, any risk-management approach is mainly based on qualitative criteria, that can only be confirmed over time by observations in the market. Is there a role for a risk management in the sense of an independent oversight function in a private equity fund investment programme? Arguments that put this into question are:

- Financial models for venture capital rely on a series of often "heroic" assumptions. Results require interpretation and are often controversial. When problems occur, it is usually too late, so how can risk management exercise any "control"?
- Risk management can come in mainly at the beginning, i.e. pre-investment. Because of the opaqueness of the market it is faced with the same problem, like the organization's investment managers. To form an opinion on the investment proposal based on the

<sup>1</sup> Quoted in Northedge (2004).

<sup>2</sup> For an analysis of diversified private equity fund-of-funds portfolios we refer to Weidig & Mathonet (2004).

information collected is difficult in private equity, as there is no independent source of information.

- To form its opinion, risk management either needs to rely on a subset of the information provided by the very same investment managers whose assessment it needs to validate, or it needs to conduct its own due diligence. Because of the costs associated with this, a second due diligence does not appear to be a meaningful approach. In any case, the assessment of a blind pool investment will be as opinionated as that of the investment managers, effectively blurring the distinction between risk management and investment decision. Re-doing the analysis will usually not add value.
- An independent oversight function is difficult to sell in an environment where most investment vehicles are set up as partnerships, and where senior management traditionally invests itself and therefore should theoretically provide an effective check and balance.

Often the role of risk management—if this role exists at all—is reduced to a kind of reporting function. On the other hand, private equity investment programmes become more and more institutionalised and, especially if held by banks, pension funds or insurers, are subject to regulatory supervision. For such organizations an independent risk management function can add value, e.g. in the following areas:

- Even if a valuation cannot be verified independently, risk management can define—or at least review—appraisal methods, assure their consistent and disciplined application and make decision making transparent.
- The limited partner's investment managers are represented in investment committee meetings and are potentially getting access to insider information on publicly quoted companies. Therefore, a compliance function comparable to that of other asset managers should be put in place.
- Investment managers tend to focus on individual deals. As portfolios grow, analysis in various dimensions becomes increasingly complex and requires the assessment and monitoring of the big picture.
- An independent risk management function increases professionalism and transparency and may help to keep the investment managers' "animal instincts" under control. Best practices in asset management suggest that specifically performance measurement and projections be done independently. Moreover, risk management should supervise agreed limits and be presented in valuation committees.
- Generally, there is significant danger that in this industry the relationship aspects dominate and blur the economical rational. For some investment managers, conflicts of interest emerge over time as relationships with fund managers or other limited partners become to "cosy".
- An independent risk management function can also address due diligence risk, i.e. a slippage of standards or an inconsistent approach when fewer opportunities are around or when it becomes too difficult to access the top funds.

Institutional investors under regulatory supervision often do not intend to establish the tools necessary to assess the risks of investing in private equity funds or to build diversified portfolios. In this case they prefer to go the fund-of-funds route and require reassurance that the manager of their mandate clearly understands and controls the risk.

**Table 7.1** Role of risk management

Risk management responsibilities	Main activities (examples)
Risk governance	Establish risk policies Document level of delegation Establish limits
Risk measurement	Optimise portfolio/liquidity Over-commitment strategy Review operational risks
Risk monitoring	Produce risk report Highlight exceptions Review limits and initiate appropriate actions
Compliance	Check fairness of valuations Check concentration ratios Check drawdowns/repayments Prevent insider trading Produce compliance report

Young funds-of-funds without a credible risk monitoring and management process could find it difficult to attract assets from such institutional clients.

The caveat remains that an independent risk management function depends on open communication within the organisation, which is exceptionally difficult in a culture of private investing, where relationships are often seen as “proprietary” and in fact in many cases provide a personal safety net.

7.1 MARKET VALUE

Market values are of interest because asset markets support an “information aggregation” function. Therefore, market values reflect a large amount of “intelligence” about an asset. The more informationally efficient a market is, the more effective is the price discovery and the information aggregation. Moreover, the market learns from itself through the values of assets being traded. Public securities markets are very “dense”, with large quantities of homogenous shares of assets typically being simultaneously bought and sold continuously at publicly quoted prices in stock exchanges that promote liquidity and information availability.<sup>3</sup> This makes marking-to-market for publicly traded securities easy, accurate and cost-efficient.

*You know the definition of a long-term investment? It's a short-term investment gone bad.*  
Joke going around in the investment community

<sup>3</sup> In public markets, an (in practice) infinite number of analysts and analytical tools is digesting all available information. The real-time exchange of various valuation results, demand and supply information leads to a very narrow band of consensus value and realisable price—because of arbitrage effectively one “standard valuation tool” is applied to all investments. In the extreme, observed prices are equal to market values.



For private equity, Geltner & Ling (2000) define market value as the “most likely” or “expected” transaction price at a given point in time. Market value equals opportunity cost, what the holder of the asset is giving up by not selling the asset, and what a potential buyer can expect to have to pay to obtain it. Market value defined in this way approximates the actual transaction price one would expect to empirically observe in a highly liquid, dense market, with “market clearing prices” where the number of buyers equals the number of sellers.<sup>4</sup> For private equity, secondary markets are missing or highly imperfect. Therefore, private equity is not informationally efficient and there is significant price dispersion. In principle, return characteristics in the context of illiquid markets can be measured either by looking at the observable, although infrequent, cash flows only, or by considering reported valuations for the assets.

Theoretically market values could be estimated by observing transaction prices in the private equity market. These transaction prices should be distributed around the market value. The market is relatively thin, and each underlying asset typically trades only rarely. The realised returns of private equity investments can only be observed by looking at the cash flow stream generated over a fund’s lifetime.<sup>5</sup> As each transaction is privately negotiated between the buying and selling parties, it is impossible to know exactly what the market value of any private equity asset is at any point in time. Even when observed, transaction prices are only “noisy” indications of the market values. The fundamental problems are that in private equity markets unique assets are traded without public disclosure of price, and that the trades are infrequently and irregularly through time in deals that are between few sellers and buyers.

Moreover, parties involved may have access to better information, higher negotiation skills, or lower pressure to close the deal. Therefore, in a given transaction one side can get a much better deal, particularly when the seller places a higher premium on short-term liquidity, while the buyer places more importance on return, irrespective of holding period—the typical situation in secondary transactions. The asset may also be worth more to the buyer than to the seller, e.g. for a start-up that is cash-burning and cannot be further financed by the selling party, while the buyer has stronger capabilities to develop the company’s value. As no one can observe the true market value of the asset, neither side in the negotiation knows the “true” price. This implies that asset values are measured with significant errors and that market values can only be estimated through appraisal techniques. Indeed, venture capital—like real estate or antiques—is mainly an appraised asset class, valued not by the consensus of many market players but by few experts.<sup>6</sup>

If two appraisers are asked to value the same asset at the same point in time, and are prevented from communicating with each other, they will almost certainly not arrive at exactly the same estimation of the market value. The difference between a given empirical appraised value and the unobservable true market value at the same point in time is called “appraisal error”. It exists even if the appraiser is not incompetent, negligent or partisan. Appraisal values may also be biased. This results from a very rational behaviour of the appraiser, as private equity and

---

<sup>4</sup> This is conceptually very close to the notion of fair value as defined under the IAS39.

<sup>5</sup> See Kaserer, Wagner & Achleitner (2004), who discuss implications of measuring cash flow-based returns instead of asset value-based returns.

<sup>6</sup> See Cheung *et al.* (2003): “Public equities are more amenable to being given a market value . . . whereas private equity NAVs are marked by the general partner . . . Due to the lack of a liquid market where interests in private equity can be bought and sold, the value of a private equity fund is that ascribed to it by the general partner . . . Assigning an independent, and potentially unbiased, value to private equity investments is largely based on specialists who value each investment based on their views of the investment’s earning potential and/or comparisons with other investments.”

venture capital valuation guidelines have a conservative tendency, or because appraisers are tending to be more “backward-looking”, dependent on transaction price observation. There is trade-off between valuation precision and valuation “currentness”.

Transaction prices and appraised valuations are empirically observable values. Appraisals can be conducted whenever necessary, while transactions happen only rarely. As a basis for comparing performance between funds, transaction prices are not necessarily better or worse than appraised values. Appraised valuations are based on transaction price evidence, and transaction prices are influenced by appraisal estimates. Therefore, both contain errors, as there is a difference between empirically observable prices or valuations and the underlying conceptual “true” market value. Market values are theoretical or conceptual constructs. They always exist and change over time because news on the asset arrives continuously. For private equity funds, market prices are not observable, and transaction prices are likely to differ from the economic value of an asset being traded.

For investors who do not have to trade in the asset market in the short run, it is the long-run economic value rather than the market value that is of interest. Economic values are usually estimated based on a discounted cash flow analysis. Because of the long time horizons and the variety of likely scenarios, determining the economic value is usually very judgemental.

## 7.2 MARKET OR CREDIT RISK?

### 7.2.1 Market risk

Market risk is the risk of losses arising from adverse movements in market prices or market rates (e.g. interest or exchange rate fluctuations), while credit risk is the risk of losses stemming from the failure of a counter-party to make a promised payment. When dealing with market risk, a relatively short time horizon is considered. Credit risk, on the other hand, relates to a longer time horizon.<sup>7</sup> Equity investments are mainly exposed to market risk, and one would assume that private equity investments should be treated within this framework. It is problematic to adopt concepts of public equity funds investing to the context of private equity funds. The problems to overcome in assessing private equity funds are conceptually different, mainly because they are blind pool investments. The availability of data for quantifying the risk characteristics is limited, and valuations are difficult to establish. The investment supports long-term growth backed by selectively unique and illiquid assets. And private equity funds do not have a track record—only its management team may have one.

A market-based approach is not easily applicable for the typical private equity fund, as it depends on the ability to track consensus-based valuation over a reasonably long period. Information about private equity is hard to obtain in a non-aggregated form, and it is difficult to say how relevant published figures are.

### 7.2.2 Credit risk

As Webb (2001) points out, one *“instrument where the shifting credit/market risk situation poses one of the more interesting challenges is private equity. Prior to the IPO, it is illiquid and has no market price available. This is very similar to a credit that cannot be hedged and—in case of default—has a recovery rate of almost zero. During this stage of its life it*

---

<sup>7</sup> Until these risks are eliminated. For an in-depth discussion of market vs. credit risk, see Dowd (1998).

*therefore needs to be handled more like a conventional credit, with projections and stress testing of future cash flows. However, as the date of the IPO approaches, that situation starts to change and you have to think about how to hedge your stock at the time of the IPO”.*

One of the main characteristics of equity finance, i.e. that it is irredeemable, does not hold in the self-liquidating private equity fund structure with its defined lifetime. Generally, private equity assets, with their low liquidity, require, in the eyes of most industry practitioners, risk analysis closer to that which accompanies the assessment of default risk, rather than a market risk paradigm. “Rating” approaches, where private equity funds are grouped into categories associated with growth expectations, are widely used in the industry.

The definition of “default” does not translate well into the situation of a venture capital-backed start-up. The company is technically already in a default, as it is unlikely to pay its debt obligations without further financial backing of its venture capital financiers. In this situation, the default probability depends on the assessment of the investor’s ability and willingness to further finance the venture-backed company, and the financing pattern applied by the investors. To put it another way, no credit would be given to a start-up without assessing its venture capital backers and without requesting guarantees from them. Consequently, the rating object should also be the fund, rather than the start-up company in isolation. It is unclear how to differentiate between the company and its investors, and it is hard to get statistically significant historical data from start-ups in an unbiased form and in a sufficiently large amount.

In the context of private equity funds, there is no common definition of the default event. Theoretically, a default for a fund could be defined as the failure to pay back capital to the limited partners.<sup>8</sup> Also, a fund that does not meet return expectations (e.g. as defined by the hurdle rate) could theoretically be considered in default. However, this status can only be detected at the end of fund’s lifetime and therefore does not form an “event” in the true sense.

### 7.3 CONCLUSION

A private equity fund investment has characteristics of debt and equity and both the standard credit and market models are difficult to apply. Private equity is a buy-and-hold investment, where the resilience of profitability comes from the ability to develop companies over a substantial time period and to wait for the appropriate market window for a profitable exit. From the limited partner’s viewpoint, valuations will be very different, depending on whether the investment is held until maturity or whether the limited partner intends to exit it before the end of a fund’s lifetime. Valuations and associated risk weightings should therefore be done under the assumption that investors have the ability and the intent to hold the venture capital fund investment over its full life. Moreover, it is important to consider the various financial structures and instruments for investor protection and for alignment of interests between investors and investees in this industry.

Specifically on equity investments, the Basel Committee<sup>9</sup> states that it “*is a sound practice to establish a system of internal risk ratings for equity investments. This involves assigning each investment a rating based on factors such as the nature of the company, the strength of management, industry dynamics, financial condition, operating results, expected exit strategies, market conditions, and other pertinent factors. Different rating factors may be appropriate for direct and indirect investments*”. For long-term equity holdings, the divide between

<sup>8</sup> On the fund level it is difficult to obtain a sufficiently broad and unbiased sample to estimate a probability of default and loss-given-default. Publicly accessible databases on private equity give aggregated figures and are thus of reduced use.

<sup>9</sup> See Basel Committee on Banking Supervision (2001).

market and credit risk is not entirely clear.<sup>10</sup> For private equity funds, mainly the unobservable economic value is of relevance. The methodologies used to determine a fund's economic value have a lot in common with techniques used in the area of credit risk assessment.

## APPENDIX 7A: INCORPORATING PRIVATE EQUITY INTO THE TRADITIONAL VaR FRAMEWORK

Typically the value-at-risk (VaR) is used as a measure of losses due to unexpected but likely market movements.<sup>11</sup> The VaR concept can only be applied with difficulty to private equity or illiquid investments.<sup>12</sup> To get around the practical problems, Simons (2000) suggested that *“private equity stakes should be valued as frequently as feasible and whenever a material event occurs”*. Also regarding reporting frequency, there is a trade-off; a higher number of reports results in more errors per period. In the absence of market values, a VaR calculation for a private equity portfolio can either utilise financial reporting data or can mark-to-model.

### 7A.1 VaR CALCULATION BASED ON REPORTED FINANCIAL DATA

One could calculate private equity returns on the basis of reported asset values, such as the Net Asset Value (NAV). NAVs are calculated along valuation guidelines developed in a self-regulation context and aim at reflecting the fair value of the whole investment portfolio. Under some circumstances this value could be derived within a marking-to-market framework. The NAV only occasionally reflects the true market price, i.e. the price at which a fund's asset would be sold in an open market transaction at a given point in time. This is due to the unavoidable valuation errors made and the strategic disclosure policy followed by the general partner. Investors typically use a new third party financing in a company as a chance to mark their holding to market, referencing the price paid per share by the new investors. Even if one does accept that intermediate financing rounds influence value, these events are too scarce to permit traditional statistical analysis.<sup>13</sup>

The concept of standard deviation is problematic for an asset class where returns are expressed in terms of IRR. Calculating a standard deviation requires reliable valuations at regular intervals. By its very nature, private equity is unable to provide this. Of course, a standard deviation can be calculated by reference to the valuations made for reporting purposes. However, these valuations tend to be conservative and are based on book value, especially in the early years, they are inclined to understate standard deviations. Therefore, investment reporting is insufficient to calculate any “volatility” for an investment.

<sup>10</sup> See Credit Suisse Group (2001): *“In our view, the definition of equity exposure requires greater distinction between equity holdings held for long periods of time and those held for shorter periods of time. We believe that capital requirements of the equity holdings held for long periods should be determined along the lines of the IIF proposals and basing the EAD for these holdings on their book value (when acquired). For equity holdings held for shorter periods, we believe that capital requirements should be based on a market risk/stress testing framework instead of a PD/LGD/EAD framework, also as proposed by the IIF”*.

<sup>11</sup> For this discussion, other procedures like stress testing or scenario analysis are ignored. These approaches are applicable to market risk and to credit risk.

<sup>12</sup> See e.g. Layton (2000): *“VAR is often of limited value, for example, in disturbed markets, in more exotic markets, in thinner instruments (e.g. Private Equity investments—private or public)”*; or Dunbar (2000): *“Unfortunately, standard techniques such as Value-at-Risk, are, in Benson's words, ‘completely meaningless’ when applied to private equity. The key issue is liquidity: for unlisted companies, the opportunities to buy or sell a position are often rare”*.

<sup>13</sup> See Dunbar (2000): *“Because ‘write-ups’ attract considerable debate, other investors take a more conservative view, refusing to recognize any change in the value of their initial investment until they have completely exited the position. The argument is that mark-to-market valuations are too easily subject to bias created by different financing styles”*.

## 7A.2 MARKING-TO-MODEL

Often a “marking to model” is seen as a way out. Such financial models to derive a market value are complex and also require significant data input.<sup>14</sup> The Basel Committee on Banking Supervision (2001) suggests, as a simple technique for identifying possible risk weights for directly held private equity investments, the use of return series on publicly traded small stocks as proxy.<sup>15</sup> This is based on the assumption that the exogenous factors that affect the value of small private companies are the same factors that affect the value of small public companies. Moreover, small company equity markets generally represent the market that serves as the primary exit vehicle for private equity—either through IPO or via company valuation in the case of mergers and buy-outs. In addition, publicly traded companies are often used as comparables in a fund management’s periodic valuation and performance assessment of the investee company. However, this suggestion is in conflict with some financial research.<sup>16</sup> A link to market indices may be of some use as a point-in-time valuation of a directly held later-stage private equity portfolio. The underlying assumptions of this simple approach may to some degree be applicable to pre-IPO investments; they definitely do not hold for venture capital.

To sum up, “rough and ready” methods for a market risk approach, such as using stock market indices as comparables, have a weak theoretical and empirical foundation, while sophisticated methods have data requirements that are difficult to fulfil, even for a directly held private equity portfolio.

<sup>14</sup> See Dunbar (2000).

<sup>15</sup> 3i PLC values all unquoted equity investments in the manner described below (see 3i PLC, 2002): “*New investments are generally valued at cost for the first 12 months or, if later, until the receipt of audited accounts covering a period of at least six months since the date of investment. Any investment in a company which has failed or is expected to fail within the next 12 months is valued at nil. The value of other investments (except technology investments) is arrived at by applying 3i’s proportion of equity shares held to the valuation of the company calculated by multiplying the latest audited earnings by the average price earnings ratio of the relevant sector of the FTSE SmallCap Index (or international equivalent), adjusted downwards by 3i to exclude loss-making companies. If the result of this calculation is less than half of 3i’s share of net tangible assets, then the investment is valued at half of 3i’s share of net tangible assets. The value of technology investments is arrived at as set out above, except that where the investment is in a company which is performing to plan the valuation is not reduced below cost*”.

<sup>16</sup> e.g. Reference is often made to Zimmermann, Bühler & Scherer (1997). In a newer paper, this research is expanded to European publicly traded private equity vehicles (see Bauer, Bilo & Zimmermann, 2001). These authors also found that “*there is no or even a slight negative relationship between bonds and private equity. There is a positive but low correlation between private equity and traditional stocks . . . Surprisingly, the correlation of the private equity companies with small caps is not particularly high even if the underlying investments of the private equity companies are mostly small companies*”. Venture capital is too far from an exit and has even less measurable correlation with the stock market. US market data may contradict this—see Maxwell (2002a): “*. . . while private equity, particularly venture capital, has a high correlation to US small cap stocks—perhaps due to the recent technology and Internet IPOs which exhibit venture capital characteristics—correlation to other asset classes are modest to negative*.” These results are not supported by European data (see Bauer, Bilo & Zimmermann, 2001) and, as suggested in the quote, may be a temporary phenomenon during an overheated market. Moreover, a link to segments of market benchmarks is only possible in broad categories (such as “technology” or “biotech”) because newly emerging technologies are not represented in the actual market indices. There are also practical problems, like negative earnings or growing earnings during the initial investment stage when applying a market multiple to a start-up company.

## Portfolio Design

*... private equity is notorious for resisting the use of the analytical concepts that are fundamental to making investment decisions in other classes.*

Borel (2004)

We start this chapter by discussing how private equity funds portfolios can fit or do not fit into traditional approaches to portfolio construction. We explain why we believe that the modern portfolio theory has limited relevance to private equity, and how a more “naïve” approach can yield good results to estimate an adequate allocation to private equity funds in a global portfolio. When the allocation has been defined, the construction “in isolation” of the private equity funds portfolio can start. We describe the standard portfolio construction techniques, namely the bottom-up and top-down approaches. Finally, we present various approaches to managing the risk–return relationship.

### 8.1 PORTFOLIO DESIGN FRAMEWORK

#### 8.1.1 Modern portfolio theory

*... it is almost impossible to use standard risk–return optimisation models to determine the “right” allocation to private equity because of the difficulty in estimating the correct risk premium for private equity and the appropriate correlation with other asset classes.*

Helen Steers (2002)

In 1952, in an article published in the *Journal of Finance*, Markowitz described the basic principles of portfolio construction, i.e. to combine assets that behave in fundamentally different fashion to optimise the risk–return relationship. These principles are one of the main drivers of the inclusion of private equity—a “low” or “uncorrelated” asset class—into “traditional” portfolios. Despite the wide acceptance of modern portfolio theory and its doctrine of diversification among traditional asset managers, its relevance to private equity has yet to be widely acknowledged and applied.

##### 8.1.1.1 Lack of data

The modern portfolio theory employs rigorous mathematical techniques for designing portfolios. For the model to work, expected returns and risks as well as correlations of each asset’s return relative to all other assets’ return in the portfolio need to be known. While public market managers can rely on reliable statistical data to support their analysis, private equity and in particular venture capital lacks such data. Indeed, the analysis of private equity returns, volatility and correlations is limited by the relatively short time series of the publicly available data, which are not fully representative of the market and often biased by the

survivorship issue. Most of all, data does not fully capture the uncertainty of the asset class. Furthermore, as the standard performance measure used for private equity funds, the IRR, is capital-weighted, while for the public market assets, it is traditionally time-weighted, an analysis of correlation between private equity and other asset classes is not possible without significant adjustments.

#### 8.1.1.2 No normality

Moreover, one of the main assumptions of modern portfolio theory, namely a normal return distribution, clearly does not hold in private equity. The distribution of private equity returns departs significantly from the Normal distribution. Empirical results on private equity indicate large standard deviations of period returns, as well as significant skewness and excess kurtosis in the return distribution.<sup>1</sup> As a result, private equity can only with difficulty be incorporated within the mean-variance concept.

#### 8.1.1.3 But there might be correlation

*[Regardless of] whether buyouts or venture capital, poor private equity practice is likely to produce higher correlation with the public markets, since it involves “surfing the wave” rather than creating value.*

Barber & Zage (2002)

Some practitioners believe that asset and sub-asset allocation are the key investment policy decisions and that private equity portfolios should be managed more like public equity portfolios, drawing on many of the same tools and accepted principles, while adjusting for specificities of this market. Despite such difficulties, they use adjusted historical risk, return and correlation figures as reasonable approximations of the future to incorporate private equity investments in their portfolio models.<sup>2</sup> The common argument is that adding private equity to publicly quoted stocks and bonds moves the portfolio closer to the efficient frontier and therefore results in a better risk–return trade-off.<sup>3</sup> Even if it is generally accepted that the correlation between private and public equity is rather low, is this really so? Could it simply be comparing apples with oranges, i.e. comparing market prices against appraised data based on imperfect private equity valuation guidelines?<sup>4</sup> The conservative biases and the infrequent revaluations result in an artificial dampening of both volatility and correlation relative to public equities. Indeed, at the end of the day, the portfolio companies operate in the same economic environments as publicly quoted ones. They face the same trading conditions, interest rates and regulatory regimes. Furthermore, exits through trade sales or IPOs are generally dependent on public markets to provide valuation reference points or liquidity and absorb them. Therefore, some degree of correlation between public and private equity returns is to be expected.

<sup>1</sup> See Cochrane (2001).

<sup>2</sup> See Simons (2000), Arthus & Teiletche (2004) and Kaserer & Diller (2004).

<sup>3</sup> See e.g. Fort Washington Capital Partners (2004).

<sup>4</sup> At least so far. See AFIC, BVCA & EVCA (2004) for information on the new private equity valuation guidelines addressing the needs of direct investors.

### 8.1.2 “Naïve” allocation

*We advocate a two-stage approach, where optimisation is used for the major listed equity and bond split, but a more intuitive approach is used for less predictable markets, like private equity.*

Ian Barnes (Russel), quoted in Sormani (2003a)

As explained above, the particular features of private equity cast some doubt on solely applying traditional asset allocation techniques.<sup>5</sup> For this reason, institutions typically apply a “naïve” allocation based on common sense and cap their private equity exposure at around 5–10%, although some foundations have as much as 30% allocated to private equity.<sup>6</sup> This “naïve” allocation can be estimated based on the analysis of the following basic dimensions:

- *Absolute size.* If the allocation is not large enough, it will not allow establishing a dedicated team, which is required to expect an above average performance. If the allocation is too large, it will not be possible to find sufficient investment opportunities or it will drive the performance down having to invest in lower quality funds.
- *Relative size.* If the allocation is not large enough vs. the overall portfolio, it will not allow having any significant impact on the overall portfolio. If the allocation is too large vs. the overall portfolio, the investor may be under-diversified and therefore support private equity specific risk, such as illiquidity.
- *Composition of the existing portfolio.* The benefit of adding private equity has to be analysed taking into account the existing portfolio. The general idea is to determine the various risk dimensions that the investors would like to diversify (e.g. industry sectors, countries, companies size, etc.) and to assess the impact of the private equity allocation on these dimensions within the overall existing portfolio. For example, a high-tech early stage allocation will have a more important diversification impact on a portfolio invested mostly in the “old” economy.

*The diversification benefit of adding private equity to a portfolio that already contains a small-cap allocation is marginal. In general, the goal of introducing an allocation to venture capital and private equity should be return enhancement, rather than diversification.*

Brown & Morrow (2001)

Finally, if in doubt, it is always worth tracking other institutions’ allocations to private equity, which is also giving relevant information on its relative attractiveness compared to other asset classes.

## 8.2 PORTFOLIO CONSTRUCTION TECHNIQUES

Once an allocation to private equity has been decided, the construction of the portfolio “in isolation” can start. Usually portfolios are constructed either bottom-up or top-down. The bottom-up approach is fund manager research-based, i.e. where the emphasis is on screening all investment opportunities and picking the best managers. A top-down approach is strategy research-based, i.e. where the investor focuses on strategies and the determination of

<sup>5</sup> See Kaserer, Wagner & Achleitner (2004): “. . . we would like to emphasize that the lack of clear-cut empirical results with respect to the conditional and unconditional distribution of private equity investment return is a serious problem making any asset allocation decision a rather tricky task. In fact, even a slight shift in the distributional parameters may have a very large impact on portfolio allocation. Hence, even a slightly biased assessment of these parameters could lead to dramatic errors in asset allocation”.

<sup>6</sup> See e.g. New (2001).



allocation ranges. While appearing to be each other's opposite, the bottom-up or a top-down approaches are complementary and are therefore typically used in tandem.

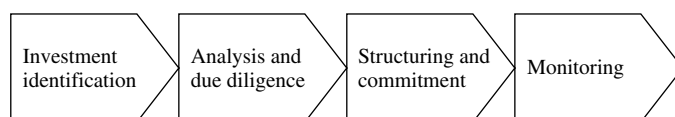
### 8.2.1 Bottom-up approach

As private equity is characterised by a high spread between top-quartile and lower-quartile funds performance, investing in the asset class only makes sense with good selection skills. Therefore, generally, investors do follow a bottom-up approach, as it is widely believed that the quality of the fund management team is the over-riding criterion, much more important than sector or geographical diversification.<sup>7</sup> The starting point of a bottom-up approach, also called "screening technique" (see Figure 8.1), is the identification of suitable investments,<sup>8</sup> followed by an intensive analysis and due diligence in order to rank the funds by their attractiveness. Then, the best funds are selected in order to invest all the capital allocated to private equity (for further information on the fund manager selection process, see Chapter 14). Rather than worrying about sectors, countries or fund style and their correlations, investors are more concerned about whether the fund managers are "top-quartile" or not, and whether they are pursuing activities outside their core expertise or not in the interests of the limited partners, which would imply a lower ranking. These concerns are mainly addressed through the due diligence process and the structuring of the limited partnership agreements with the inclusion of covenants and the post-commitment monitoring.

The bottom-up approach has several attractive features. This approach, which is the most widely used, is simple, easy to understand and robust as it depends solely on ranking. It enhances the expected performance by concentrating the portfolio in the highest "alpha" funds (i.e. funds with the highest expected performance), while it controls for risk by including a sufficient number of funds and by avoiding concentration in any single fund. However, the bottom-up approach is not without problems. As it is very opportunistic, it can lead to an unbalanced portfolio, carrying considerably more risk than expected.

### 8.2.2 Top-down approach

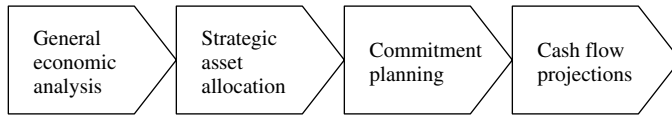
The top-down approach gives priority to the choice of sectors, countries, fund styles or trends as opposed to individual fund selection. It could be argued that investors that follow a top-down approach put a stronger emphasis on managing the strategy, the asset allocation and the diversification of their portfolio.



**Figure 8.1** Bottom-up approach

<sup>7</sup> "We have a bottom-up approach, . . . we do not have a variety of boxes that we need to fill according to the geography or sector, we approach private equity by getting into the best funds that are around at any one time regardless of their focus, but always with a view that we do not want to have too many funds that compete with each other". Wilkins, Morley Fund Management, from an interview with AltAssets February 2003b.

<sup>8</sup> By suitable investments, we mean all potential investment opportunities available during the investment period and compliant with the portfolio strategy and restrictions.



**Figure 8.2** Top-down approach

The top-down approach (see Figure 8.2) takes the “big picture” as the starting point. One analyses the macroeconomic conditions, and then determines the strategic asset allocation, i.e. the combination of industry sectors, countries and fund style that will benefit most under the likely scenarios. Main criteria that are evaluated are the political, economic and currency risks, but also the extent to which the market has accepted equity as a form of financing and investment, and the degree to which the environment is conducive to entrepreneurial activity. In this context, factors influencing the ability to invest, such as due diligence standards, accounting and tax issues and the enforceability of legal rights, are also evaluated. Finally, the availability of attractive investment opportunities and the availability of exit opportunities for investments, such as the stock market, are considered. In the widest sense, allocation of commitments to vintage years could also be considered as part of a top-down approach.

After the definition of the strategic asset allocation, a high-level commitment planning is performed. It depends on the investor’s desired exposure level, risk tolerance and the available resources for investing. Then the final commitment strategy is determined, based on cash flow projections and stress testing. Subsequently, one looks for funds that fit the defined allocation.

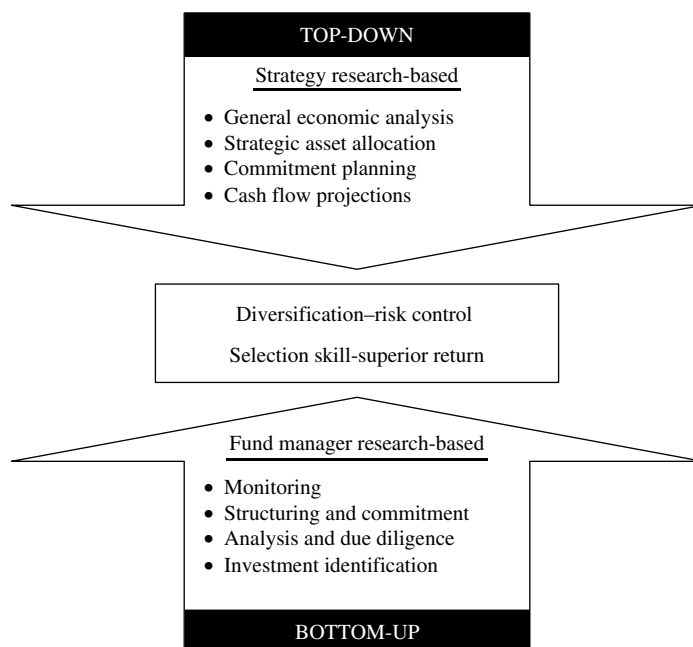
There are also investors who aim to mimic the top-down approach adopted with public equity, which is based on the past performance of the assets in terms of risk and return measures as a proxy for the future investment performance. They try to exploit perceived low levels of correlation in different private equity segments across geographical regions. While such an approach certainly has its merits, there are a series of practical problems associated mainly with the limited availability and quality of financial data for private equity. As data only becomes reliable for fully liquidated funds close to realisation, any quantitative approach reflects an outdated economic environment and will be an even less indicative for the future. Even without being overly rigid or quantitative, a top-down approach can be used as an instrument, either to “generate alpha” by trying to spot the “next big thing” in private equity, or as a sanity check that helps to avoid “hypes”. Based on pre-screening criteria derived from this high-level allocation, the fund managers can limit the time they spend on analysing individual investment proposals.

Apart from the questions associated with determining the weight of sub-portfolios, the major shortcoming of a top-down approach is that strict allocations are not possible in reality. In practice it may be difficult to find and access a sufficient number of superior managers to fill in each pre-determined sub-class allocation. Indeed, often only one or two superior managers operate in a particular sector, and they raise capital only every 3–4 years.

### 8.2.3 Mixed approach

As both pure bottom-up or pure top-down approaches are not without problems, most investors follow a combined approach<sup>9</sup> (see Figure 8.3). Indeed, even a strong believer in the

<sup>9</sup> See [www.adamsstreetpartners.com](http://www.adamsstreetpartners.com): “Adams Street Partners’ investment strategy and process examines both top-down and bottom-up characteristics of a particular investment opportunity”.



**Figure 8.3** Mixed approach

top-down approach would rarely invest in funds that are not of high quality just to fulfil its target allocation. Likewise, no “fund picker” would commit all its money to a single sector just because it has the opportunity to invest in outstanding teams. Investors are conscious of the importance of diversification, but instead of diversifying on the base of the correlation among the different asset classes, an approach that heavily relies on past information, they define their target allocation on the basis of the investment strategies of the funds where they invest. Basically it is a top-down approach where the capital is allocated equally to the different asset classes without taking any view on their future evolution.<sup>10</sup>

The following investment strategy is representative for private equity funds-of-funds. They invest exclusively in established private equity markets such as the US, UK and selected European economies; target the “premier league” of private equity funds in Europe and US and diversify by stage, focus, geography and time.<sup>11</sup> The goal is to create a portfolio diversified according to the investment strategies. In this portfolio all the strategies have equal weight.

<sup>10</sup> Rod Selkirk, Head of Private Equity, Hermes Pension Management, from an interview in AltAssets, 11 March 2003: “I want to stress that our investment strategy is more a framework than a rigid allocation. We would never invest in sub-standard funds simply because our asset allocation model dictated that we had to have a certain amount committed to a particular type of fund”.

<sup>11</sup> Shearburn & Griffiths (2002b) describe an approach that “consists in creating a portfolio of unique private equity strategies that are diversified from one another over multiple dimensions. These dimensions might include industry focus, investment size, geographic focus and private equity sub-asset class (such as leverage buyouts, venture capital, growth capital and distressed investments). Thus, the primary goal is to assemble a portfolio of superior managers capable of generating extraordinary returns, with each manager’s strategy being as distinct as possible from all the other strategies in the portfolio . . . Second, investors using this approach weight each strategy equally in the portfolio in order to minimize the concentration of the funds. This means, for example, to invest the same amount in a London-based, large buyout private equity manager as in a Silicon Valley-based early stage venture capitalist. . . . This manager-driven, equally weighted approach to portfolio construction also restricts the weighting of private equity sub-sectors, even where an investor may have a strong point of view”.

Investors that claim to have a top-down or a bottom-up approach both stress the importance of a pro-active approach in fund selection. Investors cannot just wait for investment opportunities but must pro-actively search for the funds that fit their investment guidelines and start taking contacts before these funds go to the market to raise capital. This requires a constant monitoring of the environment. In order to adopt a top-down approach, an investor needs to have an available universe and a number of funds in its “wish-list” sufficiently large to build a diversified portfolio.

Finally, there is also a development path in the adoption of the different approaches.<sup>12</sup> For the early stages of an investment programme, one of the main objectives is to put capital quickly to work in the best available teams in order to minimise idle liquidity. As young programmes cannot count on an established relationship, the available universe of investment opportunities is restricted to a limited number of accessible “wish-list” funds. This makes a top-down approach difficult to implement, as allocation targets would make little sense. After a sizeable portfolio has been built, a top-down approach starts to become important, as concentration (e.g. in sectors or in teams) can create risks.

## 8.2.4 Portfolio monitoring

Detailed asset allocation promotes effective diversification and eliminates the problems associated with haphazard fund selection, but generally it is problematic to obtain equal weighting and at the same time be represented in key market segments. In addition to that, significant changes in investment valuations due to market fluctuations and distribution activity may cause the allocation to exceed the maximum limit.<sup>13</sup> Furthermore, as limited partners are investing in a blind pool, the investment is mainly based on the fund managers’ declared investment strategy. Funds will not necessarily adhere to it, and neither should they. For example, in a difficult market environment it makes sense to deviate and look for investments in more promising areas. Therefore, to ensure that the allocation remains within the established ranges, a major task of the limited partners in the management of the allocation to fund types is a consistent monitoring and adjustment of the portfolio structure.<sup>14</sup>

<sup>12</sup> see Magnani (2003).

<sup>13</sup> Rouvinez (2003b) argues that, for seasoned fund-of-funds portfolios, the real diversification is often smaller than the number of funds suggests. The reason for this is that some funds have, due to their different drawdown speed or development of their portfolio, a higher weight. He defines the total exposure per fund as:

$$TEXP_i = Undrawn\ Commitment + NAV$$

For the management of diversification, Rouvinez discussed the equivalent number of funds (ENF), i.e. the number of funds a homogeneous portfolio would have to contain so as to show the same volatility of return as the original heterogeneous portfolio. According to this author, a reasonable proxy for a portfolio’s ENF would be:

$$ENF = \frac{\left( \sum_{i=1}^n TEXP_i \right)^2}{\sum_{i=1}^n TEXP_i^2}$$

$n$  being the number of funds in the portfolio. As an example, we can consider a portfolio of three funds with exposures 1, 1 and 4. Here, the ENF would only be 2, and the formula suggests that a portfolio of two funds with equal exposure show the same volatility in returns. However, the management of diversification based on exposure is not without problems. First, the real financial exposure should be equal to the economic value and not to the TEXP. Furthermore, the valuation problems associated with the NAV render the TEXP as a decision criterion even more questionable. Finally, it could stimulate counter-productive behaviour, i.e. reducing the allocation to the funds that have shown the highest value increases. To avoid this, diversification in private equity could alternatively be managed on a commitment basis.

<sup>14</sup> Xavier Caron, CPR Private Equity from an interview with AltAssets, April 2003: “We do not have a strict allocation. We know that rigid allocations don’t really work in private equity. These splits are more usefully thought of as a risk limit; we had some pressure, for example, a few years ago from investors to over-allocate early stage investment. But we decided not to breach the limits we set ourselves at the beginning. With hindsight, that was a good move”.

At the fund level, a first approach to adjusting of the portfolio structure is the continuous review of the ongoing investment pipeline in primary fund investments. However, this strategy may be restricted by the availability of suitable investment opportunities, or by delays in closing the deals. Moreover, when the private equity portfolio is large, the adjustment via primary transactions may be insufficient. Another approach is to adjust a portfolio via secondary transactions. However, that requires expertise, and opportunities do not always exist. Alternatively, on the portfolio companies level, co-investing alongside the fund managers is a tool for increasing exposure to certain sectors, but also requires specific skills. Finally, a further option is to use public small-cap equity to assure that a programme adheres to agreed target allocations as closely as possible. This could be a meaningful investment where a significant pool of undrawn commitments needs to be managed.

### 8.3 RISK–RETURN MANAGEMENT APPROACHES

The goal of the portfolio design is to combine assets that behave in fundamentally different fashion to optimise the risk–return relationship. As discussed previously, for private equity, this task is rather challenging, as traditional approaches are not fully relevant to private equity. Therefore, for private equity funds portfolio, the management of the risk–return relationship requires additional techniques. In this section, we first explain how, by structuring the portfolio in two or more sub-portfolios, the management of the risk–return relationship can be improved. We end this section by a review of the benefits and limitations of diversification for portfolios invested in private equity funds.

#### 8.3.1 Core–satellite approach

*Funds in the selection process can be split into core and non-core allocations. Core groups are conservative mainstream vehicles—those with established track record. The non-core allocations can be first time funds that have an experienced management team raising a first time fund, or a group that has spun out of a larger institution.*

Sormani (2003a)

Above, we have considered the portfolio as one entity to be constructed. An alternative is to structure the portfolio in various sub-portfolios. Such an approach is based on behavioural portfolio theory, where portfolios can be constructed as layered pyramids. A well-diversified core or bottom layer provides downside protection for the portfolio (risk aversion), while a less diversified satellite or top layers aims for the upside (risk seeking).<sup>15</sup> This method aims to increase risk control, lower costs and added value. The core–satellite approach is a way of allocating assets to protect and grow wealth.

Behavioural portfolios, such as those reflected in the rules of “core–satellite”, are sensible ways to allocate portfolio assets. For example, they can be designed as:

- “Core” portfolio: institutional quality funds that are able to raise large pools of capital and are expected to generate a predictable base return.
- “Satellite” portfolio: niche strategies funds that fall out of the mainstream (emerging market, new teams, specialist funds, etc.).

<sup>15</sup> See Statman (2002): “The desire to avoid poverty gives way to the desires for riches. Some investors fill the uppermost layers with the few stocks of an undiversified portfolio like private individuals buy lottery tickets. Neither lottery buying nor undiversified portfolios are consistent with mean-variance portfolio theory but both are consistent with behavioural portfolio theory”.

### Box 8.1: Niche strategies

When portfolios of quoted assets are designed according to the “core–satellite” approach, the management of the core portfolio is normally “passive”, while the management of the satellite portfolio is “active”. For private equity, the characteristics of this asset class do not allow for active management (see Chapter 12 on benchmarking). Therefore, the core portfolio is usually seen as composed of “institutional” quality funds, while the satellite is composed of niche strategies. Most niche strategies are seen as highly uncertain, expose the investor to unrewarded specific risk and are incorporated in portfolios for diversification reasons.

According to Kevin Albert of Merrill Lynch’s Private Equity Group, *“the definition of a niche strategy is pretty amorphous; it’s everything other than vanilla venture capital and LBOs where the bulk of the money has gone”* (see Alphonse, Hellmann & Wei, 1999). To make this differentiation, we suggest using a qualitative fund scoring system (see Chapter 15), which measures the deviation of a fund vs. the “mainstream” of “institutional quality” funds.

Related to the question of niche strategies are specialist funds that target, for example, sectors such as telecom, IT, biotech and life sciences, or specific private equity stages, including seed capital and early stage ventures. Managers who have devoted their careers to building an industry-specific knowledge base and to developing, in this particular industry, unique business relationships, should be best positioned to invest successfully in a given sector. Their unique skill sets or differentiated strategies are expected to lead to attractive returns. According to AltAssets Research (2002), in *“general, institutions felt that there was a marginally greater risk in specialist funds because they were likely to be beholden to the performance of a single sector”*. High technology risk leads to favouring specialist over generalist funds that are investing without apparent focus, as generalists often lack expertise in complex sectors compared to specialists.

Furthermore, we suggest the following differentiation:

- “Opportunistic” niche strategies with varying supply in the market: an example is secondaries, where the model is clear and widely accepted, but the strategy often cannot be implemented due to the lack of sellers of secondary stakes. Consequently, a targeted portfolio allocation is difficult to meet. The main driver for pursuing such strategies is the proven potential for out-performance. Key success factors for this activity are access to opportunities and quick execution of deals.
- “Systematic” niche strategies with continuous supply in the market: e.g. first-time teams, or corporate ventures, where availability of opportunities is less of an issue and where a reasonably continuous pool of proposals is available. While the potential for out-performance is questionable, such strategies are, for example, pursued for portfolio diversification. Key success factors are portfolio management and selection skills.

This may be an effective strategy for institutions that want to diversify their portfolios without giving up the potential for higher returns generated by selected active management strategies. Another advantage is the flexibility to customise a portfolio to meet specific investment objectives and preferences. It also provides the framework for targeting and controlling those areas where an investor believes he is able to better control risks or is willing to take more risk. What constitutes core vs. satellite clearly depends on the investor

focus and expertise. Some see venture capital as “satellite”, while others view a balanced buyout and venture capital funds portfolio as “core”. Finally, another benefit to this approach is that it allows spending more time on the satellite portfolio, which is expected to generate the excess performance and less time on the core portfolio, as it is less “risky”.

### 8.3.2 Diversification

*How does an investor deal with a high variance situation? If they're fools, they try and pick one or two winners. If they are professionals, they average. You'll notice that the UM portfolio has at least five different VC funds in every complete year from 1996 onward. They are pros.*

Oren (2003)

Diversification is one area where limited partners attempt to manage the risk–return relationship. Therefore, another key question related to the portfolio design is the optimal number of positions. Research suggests that, for most assets, sufficient diversification is achieved with 20 positions of whatever one is seeking to diversify.<sup>16,17</sup>

Diversification should be increased as long as the marginal benefits of adding a new asset to a portfolio exceeds the marginal cost. In private equity, diversified portfolios are difficult to implement, as the access to the suitable investment opportunities is not easy and limited, and as the transaction costs and the monitoring expenses are high. Furthermore, an over-diversification will drive returns to a mean, which is in conflict with the main objective of investing in this asset class, namely providing access to top tier funds and generating above average returns.

#### 8.3.2.1 “Naïve” diversification

Due to the poor quality of the available data, Markowitz’s “big D diversification” is difficult to apply for private equity. An alternative is the “naïve diversification” or “little d diversification”.<sup>18</sup> Kempf & Memmel (2003) state that, when data and forecasts are not reliable, equal weighting is the theoretically optimal solution. And Lhabitant & Learned (2002) argue that modern portfolio theory is seldom applied to the full degree anyway<sup>19</sup> and that “naïve diversification” (also called “1/N heuristics”) in practice “usually results in reasonably diversified portfolios that are surprisingly close to some point on the efficient frontier”. Moreover, there are “natural boundaries” to diversification: it is neither possible to put the entire commitment under a mandate into one fund, as funds are not big enough, nor can one diversify without limits, because there are not enough funds accessible. Naïve diversification is the optimal strategy when there is no information that allows differentiation between assets.<sup>20</sup> We see

<sup>16</sup> See Flag Venture Management (2001).

<sup>17</sup> See Weidig & Mathonet (2004).

<sup>18</sup> See King & Young (1994) on real estate fund portfolios.

<sup>19</sup> See Lhabitant & Learned (2002): “... very few investors effectively take correlations (that is, the non-linearity of risk) into account when making complex portfolio decisions. Rather, they prefer to allocate assets using simpler rules, such as dividing allocations evenly among the assets available ... Many respondents even admitted to having no asset-allocation strategy at all!”.

<sup>20</sup> However, naïve diversification approaches can be refined. Brands & Gallagher (2003) found for equity funds-of-funds that investment strategies that ensure equal representation across investment styles perform better than a naïve sampling approach. See also Shearburn & Griffiths (2002b): “Finally, these investors choose a sufficient number of strategies to provide diversification and spread risks. Based on quantitative analysis, Goldman Sachs pursues this approach to portfolio construction, targeting 18–25 different strategies in the broad-based private equity portfolio we manage”.

this as an appropriate approach under uncertainty, while Markowitz's "big D diversification" provides solutions to deal with risk.

### Box 8.2: Market timing

Market timing can be seen as part of an allocation strategy.<sup>a</sup> Market timing causes investors to hold a portfolio that defers from long-term objectives, and is often creating risks. There may be marked differences in performance from one vintage year to another. In order to ensure participation in the better years, it is generally perceived to be wiser to "cost average" and invest consistently through vintage years, as opposed to "timing the market" by trying to predict which vintage years will produce better performance. Therefore, cost averaging can be seen as "naïve" diversification over time. Investors are usually unable to forecast and time the long-term developments in technology and financial markets.

Trying to forecast which vintage year will present the best opportunities is therefore generally not seen as possible. The difficult years of 1990 and 1991, with their recession and the Gulf War, turned out to be good vintage years: funds that, against the odds, still managed to attract investors during these years delivered good performance figures, mainly because their exit period fell into the tech market bubble at the end of the 1990s.<sup>b</sup> While there is a consensus in the industry that market timing does not work, there is anecdotal evidence that some investors believe that they can do it—although so far no method has been documented.

*Time heals what reason cannot.*

Seneca

Timing the market with an active portfolio management strategy—already questionable for publicly quoted securities—is risky in private equity and mostly a matter of luck. Somehow paradoxically timing has a significant impact on returns, but timing private markets is at least as difficult as timing public markets.<sup>c</sup> VCH Equity Group (2003) found that, based on averages, no assessment of vintage year quality is feasible, but that buyouts and venture capital participate in various ways from the economic environment. For venture capital, expectations on capital markets and IPO windows are relevant, and there are stronger reactions to cycles in the capital markets than in the case of buyouts. Buyout funds can also be successful in depressed capital market conditions.

Even during relatively poor periods, good managers often produce respectable results. In any case, investors need to remain present in the market to "reserve the right to play" and to get access to top funds. According to Smith (2001), in "*today's environment, the question of timing ability is academic—a fund sponsor who skips a fund offering is*

<sup>a</sup>See Flag Venture Management (2003a): "*FLAG will take a full cycle, typically three vintage years, to assemble a fund-of-funds portfolio. We do not raise capital every year, or two and then deploy it in the best available funds, but wait for our short list of top managers to raise new funds*".

<sup>b</sup>Capital-weighted average IRR for 1992 vintage year US buyout and venture capital funds were 24.4% and 24.6%, respectively (source: Piper Jaffray Private Capital, 2003).

<sup>c</sup>See Malkiel & Firshtenberg (1976): "*We are particularly averse to the suggestions [to] try to move in and out of the stock market according to its capacity to forecast market trends. Investors who wish to play this timing game must possess an unusual degree of prescience about the course of the general economy, corporate profits, interest rates, and indeed the entire set of international economic, political, and social developments that affect the security market. The existence of such omniscience, to say the least, is hard to document*".



*unlikely to be invited back for the next fund*". A commitment to private equity should be a long-term strategic decision, not a short-term tactical one. It is virtually impossible to market-time the entry into, or the exit from, this asset class. Also, any market prediction over such a long time period is a futile exercise.

By making concentrated bets against the adopted asset allocation, market timers run the risk of inflicting serious damage by holding a portfolio inconsistent with the long-term objectives. Market timing explicitly moves the portfolio away from long-term strategic targets, exposing the investor to avoidable risks.

The best investment practice is simply to define an investment strategy and to stick to it, regardless of whether the current environment is seen good or bad. In order to get a good level of diversification, many investors have adopted what is called a "cost-averaging approach". The proven *modus operandi* is to consistently invest a fixed amount throughout the vintage years and to steadily commit to the best funds around. This approach helps to alleviate over-exposure to vintage years with high valuations. The cost-averaging principle is to set an annual investment target for each private equity fund type to avoid any inclination to try to time the cycles. It is too dangerous to assume that what has worked well in the past will continue to do so: emotional expectations are shaped by the most recent experience. Also, the private equity market over-reacts and experiences disruptions in trends. During market exuberances, it is important to go for quality and be more restrictive than other investors, while during depressed market conditions it could make sense to be more flexible, as very often the overall vintage year quality can turn out to be attractive.

Cost-averaging leads to "vintage year diversification". It mitigates risk, as it helps to alleviate over-exposure to vintage years with high valuations. The cost-averaging principle is to set an annual investment target for each private equity sub-class to avoid any inclination to try to time the cycles. Investing in secondaries could help in situations where the portfolio is unbalanced to adequate exposure to all the vintage years. It is important to stick to the budgeted allocation: new opportunities to invest in venture capital or buyout funds tend to coincide with the rise and fall of returns of each strategy. Careful investors avoid the temptation to overweight commitments to the hot strategy of the moment and stick to a long-term plan.

Albeit less rigorous than traditional portfolio models, naïve diversification is nevertheless valuable to the prudent investor, as it can avoid extreme concentrations by managing the following dimensions:<sup>21</sup>

- *Number of fund manager or general partners.* The selection of general partners with their specific management "style" or strategy and their specialised expertise in particular segments of the market is one of the key dimensions to consider when building a portfolio. There is no formal definition of style or strategies. All dimensions that are expected to impact the risk–return profile should be taken into account, and notably the private equity stage focus (venture capital, buyout, mezzanine ...), generalist or specialist focus, fund

<sup>21</sup> Standard & Poor's conducts ratings for structured notes backed by a portfolio of private equity funds. The basis of the rating is the analysis of a portfolio of private equity funds' diversification level in a multidimensional fashion. The following dimensions signal how diversified a portfolio is: number of fund managers or general partners and number of funds or limited partnerships, vintage years and calendar years, type of private equity funds or strategies, industry or sector, geography, and single investment exposure. In Standard & Poor's opinion, mainly the portfolio diversification provides downside protection to the holders of the rated notes (see Erturk, Cheung & Fong, 2001).

size or target companies size. Furthermore, having several general partners mitigate the potential over-reliance upon few key investment professionals.

- *Vintage years and calendar years.* Commitments should be made over the full course of the economic cycle and should not be concentrated in any one year. Returns to private equity are cyclical, and cost averaging or naïve diversification over time reduces the risk of getting in at the wrong time.
- *Industry sectors.* Investment allocations should be spread across managers with skills in different industry sectors. This offers protection against a sector going out of favour or against cyclical industries. For venture capital, however, opportunities may be most readily realised in a fewer industries, i.e. the ones that are likely to have significant technology breakthroughs.
- *Geography.* The location of the portfolio companies offers protection against national economies and regional downturns. However, geographical diversification has its limits, as some countries are not sufficiently developed (in terms of private equity market) to offer sufficient promising companies, and therefore are likely to negatively impact returns.

*J.P. Morgan's outfit bet big on technology during the bubble—and lost a bundle.*

The Economist (2005)

In general, a diversification strategy without taking into account the specificities of this asset class can be quite inefficient. Indeed, on one hand an over-diversification in many teams will cap the upside, while being over-exposed to sectors can create significant risks (e.g. investing in 20 different Internet funds). Furthermore, just investing in many teams without managing the diversification of other dimensions (see above) can seriously damage the portfolio. Indeed, diversification sets in more slowly when funds are highly correlated. An unbalanced portfolio, e.g. with high exposure to early-stage investments or specific vintage years, works against diversification benefits. There are also diseconomies of scale. The number of investments, rather than the invested amounts, sets the cost base—such as legal expenses, due diligence and monitoring effort—of a portfolio of funds. It also becomes increasingly difficult identifying and getting access to suitable funds, as the number of quality opportunities is limited. Consequently, for private equity fund portfolios diversification may be of limited use for the management of risk vs. return.

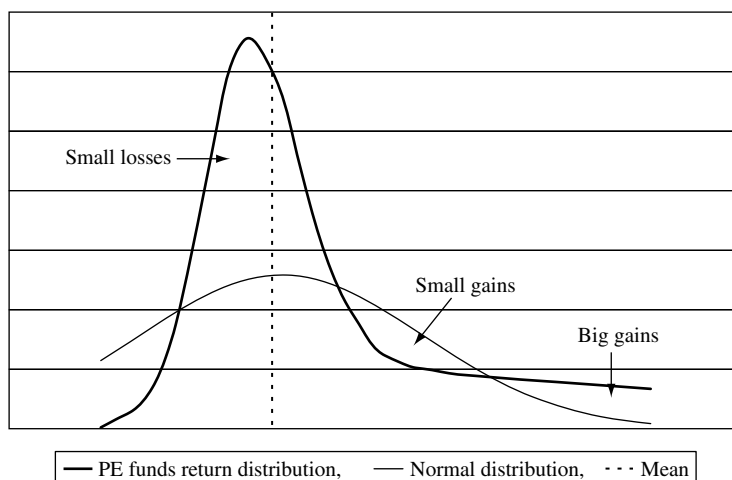
### 8.3.2.2 Skewness

Diversification has two impacts; it lowers risk as long as asset returns are not perfectly correlated but also increases the degree of normality. Private equity funds have a positively skewed return distribution with a long fat tail to the right (see Figure 8.4). A positively skewed distribution has several features distinguishing it from the symmetrical normal distribution: small losses are more likely to occur; small gains are less frequent and big gains are more frequent.

*. . . LPs have recognized that beyond a certain point, the return of any additional diversification is likely to diminish . . . To avoid such regression through excess diversification to an undesired mean, a growing number of investors are aggressively cutting back on the number of managers they want to commit money to.*

Borel (2004)

An investor can rationally choose to be under-diversified because benefits of achieving positive skewness more than compensate the cost of taking on higher diversifiable risk.



**Figure 8.4** Private equity fund skewed return distribution vs. Normal distribution

For private equity funds, the distributions of returns share characteristics with lotteries: few extraordinary winners will compensate for many small losses. As in a lottery, where buying all lots guarantees picking the winner but associated costs exceed the total gain, being invested in too many funds assures that the few top performers cannot adequately compensate the many funds with mediocre or sub-standard returns.<sup>22</sup> Therefore, in a lottery as in venture capital, a common strategy is to make few “bets” under the assumption that luck or selection skills will deliver the winners without having to supports the losers.

### 8.3.2.3 Optimum diversification level

For private equity funds it is difficult to determine what is the optimum diversification level. Indeed, in addition to the issues describe above, to answer this a series of other questions need to also be addressed:

- What is the investor’s ability to identify and—even more important—access top teams?
- What trade-off between risk taking and profit seeking is the investor seeking—what is the investor’s “risk appetite”? Arguably, fund-of-funds managers who co-invest their own personal wealth and have the fund-of-funds’ full resources allocated to the asset class are in a different risk position than an institution that allocates an immaterial share of their assets to private equity. However, the risk appetite of both investor groups may be significantly different.
- Does the investor have other non-commercial or “strategic” objectives, such as promoting technologies or creating employment?

We conclude that, for private equity, there is no “formulaic” answer to the diversification question, and therefore, in Chapter 9, we present a case study to illustrate the thought process related to the question of diversification.

<sup>22</sup> See Waters (2005): “Yet the big gains are concentrated in a handful of funds, leaving most investors with mediocre returns”.

## Case Study: Taking the Long-term View—Strategic Approaches to the Setting-up of a Private Equity Investment Programme\*

The board of administration of a European pension fund recently voted in favour of a new asset allocation mix, which calls for the setting-up of a European private equity portfolio. “*Private equity investments make the most sense in the long term*”, claimed Russell Callahan, president of the board. “*This minor adjustment will increase our ability to pay members’ retirement benefits without continued increases in employer contributions*”. Kathy Rosemond, chair of the investment committee, echoed with enthusiasm: “*This new mix will position us to take advantage of opportunities in the European private equity markets*”. Although she promptly added: “*We are managing risk prudently and remain in solid financial condition*”.

The pension fund’s private equity investments would not be direct but through funds with an initial allocation of €100 million, taken from the public equity portfolio. This amount could be increased to €500 million, depending on the success of the investment programme.<sup>1</sup> The pension fund’s total assets stand at €11.3 billion. Approximately €7 billion is invested in EU and international stocks, €4 billion in EU and international bonds, and €300 million in hedge funds.

To manage this programme, the fund has hired Harry Cover, a well-known and seasoned private equity fund-of-funds manager, and has asked Barbara Red, member of the risk management team, to assist him. Their challenge is to set up the newly approved private equity investment programme and to achieve a minimum return of 8%. Preliminary to this, Harry has been asked to define his resources requirements as well as his strategy for the programme.

### 9.1 LOOKING FOR THE OPTIMAL PROGRAMME SIZE

Harry Cover, the newly hired head of the private equity investment programme, wants to determine the optimal programme dimensions with respect to the number of investments and the resources requirements. His objective, as for any rational investor, is to beat his minimum return target while minimising the portfolio’s risk. Harry has read a recent study on the

---

\*Gabriel Robet prepared this case study in collaboration with and under the supervision of Pierre-Yves Mathonet and Thomas Meyer. Characters and events in this case study are fictitious. The case study aims to highlight the thought process and does not intend to give recommendations.

<sup>1</sup> In 2002, the average size for a European fund-of-funds was €281 million. See European Private Equity & Venture Capital Association (2002).

subject,<sup>2</sup> and he recognises that, while private equity funds can be very risky, a portfolio’s risk decreases when the number of funds in the portfolio increases.

However, Harry wonders: how much diversification is enough? A private equity portfolio is likely to experience additional costs as the number of investments increases. If these costs have a significant impact on the portfolio’s performance, then a trade-off must be found between too many funds (diversification “overkill effect”) and too few funds (overexposure to funds’ specific risks).

Harry wants to know the optimal diversification level for his future private equity portfolio. For that purpose he gathers some data and asks Barbara to model the portfolio’s expected performance (including management costs) and risk, given different size and diversification scenarios.

9.1.1 Data

As a first step, Harry needs to get reasonable forecasts of the portfolio’s management costs. The following estimates are based on the information he received from the pension fund’s accounting department with respect to the hedge funds investment programme team, as well as on his previous experience as a private equity fund-of-funds manager:

- *Staffing.* Within the pension fund there are three types of functions: investment management, back office and financial control. Harry finds that a simple and acceptable method to attribute overheads is to use the average overheads per staff figure provided by the accounting department. Overheads include general administration, and fixed costs like office space and IT systems. His estimates are as shown in Table 9.1.
- *Travel expenses.* Harry assumes that on average two trips per year are necessary for each fund in the portfolio to monitor. At around €1,500 a trip, the average travel expense per investment amounts to €3,000 per year.
- *Due diligence.* The due diligence expenses are all the additional deal-specific expenses supported during the due diligence. These include, for instance, the legal and the travel expenses. Due diligence expenses can be approximated by a one-time charge of €15,000 per investment.

For instance, an estimate for the management costs of a portfolio invested in 20 funds with an average lifetime of 12 years would be calculated as shown in Table 9.2.

Table 9.1    Staffing expenses

Team member	Average annual cost	Overheads	Average productivity	Average annual cost per fund
Investment management	€150,000	€100,000	8 funds	€31,250
Back office	€125,000	€100,000	25 funds	€9,000
Financial control	€125,000	€100,000	50 funds	€4,500
<b>Total</b>				<b>€44,750</b>

Source: Accounting department

<sup>2</sup> See Weidig & Mathonet (2004).

**Table 9.2** Portfolio management costs example: 20 funds portfolio with a lifetime of 12 years

	Annual cost	One-time charge	Total
Personnel and shared resources:			
Investment management	€625,000		€7,500,000
Back office	€180,000		€2,160,000
Financial control	€90,000		€1,080,000
Travel expense	€60,000		€720,000
Due diligence		€300,000	€300,000
<b>Total</b>	<b>€955,000</b>	<b>€300,000</b>	<b>€11,760,000</b>

Harry decides to use the IRR as the standard performance measure for private equity, but needs to “translate” the portfolio’s management costs in an IRR-equivalent measure. As a back-of-the-envelope calculation, he expresses the annual management costs as the ratio of annual expenses to committed capital. For simplification purposes, Harry divides the due diligence expenses by the average lifetime and adds it to the annual costs. For instance, the annual management costs as a percentage of a €100 million portfolio invested in 20 funds with an average lifetime of 12 years would be approximated as follows:

$$0.98\% = \frac{955,000 + \left( \frac{300,000}{12} \right)}{100,000,000}$$

This percentage would then be deducted from the portfolio’s expected IRR to determine the portfolio’s net performance.

In addition to the information on costs, Harry also needs to get access to performance data. Therefore, he decides to subscribe to a well-known private equity database in order to get the statistics needed for the simulation. The database covers 282 European venture capital funds and 195 European buyout funds. It contains for each fund the cumulative performance (IRR) since inception. Final IRR can only be calculated when the fund is liquidated, while the IRR of an unliquidated fund is referred to as “interim IRR”. Interim IRRs can be used as estimates of final IRRs. Indeed, as funds mature, the degree of confidence in the interim IRR improves. For that reason, the sample used by Harry covers funds with a minimum age of 5 years, i.e. the “mature” funds.<sup>3</sup>

Harry asks Barbara to consider potential biases in the sample, namely selection bias and survivorship bias. She concludes that the sample is representative of the whole population.<sup>4</sup>

### 9.1.2 The model

Many authors suggest that the modern portfolio theory is not applicable to private equity, because there is no continuous pricing, returns follow a non-normal distribution, and there are no reliable data about correlations. For all these reasons, Barbara decides to use a Monte Carlo simulation to build synthetic portfolios by randomly selecting mature private equity funds from the database. This allows her to generate a probability distribution function of their returns.

<sup>3</sup> See, in Weidig & Mathonet (2004), the reference to the Oliver Burgel study.

<sup>4</sup> See Weidig & Mathonet (2004).

For a typical private equity fund-of-funds, investments are done in consecutive vintage years during a predefined investment period, generally 4 years. Although the programme is “evergreen”, Harry proposes to slice it into a succession of funds-of-funds generations of 4 years. Barbara mimics this behaviour in her model. At each run, the model selects randomly an equal number of funds in each year from a random set of 4 consecutive years. This process is repeated as many as 100,000 times. Because the number of funds to select in a given year can sometimes be larger than the data available, the model allows a fund to be drawn several times.

For comparison purposes, Harry asked Barbara that for each simulated portfolio the model gives the following outputs (see Appendix 9A for the formulae):

- *The portfolio’s expected final return*, measured as the average return including management costs. Management costs are calculated based on Harry’s assumptions, depending on the number of funds and on the size of the portfolio. For simplification purposes, the committed capital is assumed to be equally invested in each fund, and a portfolio’s return is measured as the arithmetic average of the investment returns.
- *The portfolio’s risk*. Because private equity investments are highly illiquid and lack a market price, their risk cannot be measured as the volatility of a time series. Barbara considered two possible measures of risk:
  - (a) *The standard deviation of final returns*. The riskier a portfolio, the more likely it is to deviate from the expected final return.
  - (b) *The semi-deviation of final returns below a specified threshold*. This *threshold* is set at 8%, the minimum acceptable return for the private equity funds portfolio.
- *The Sharpe ratio*, calculated as the ratio of expected performance minus the risk-free rate (set at 3%) to the standard deviation.
- *The Sortino ratio*, calculated as the ratio of expected performance minus 8% (the semi-deviation threshold) to the semi-deviation.

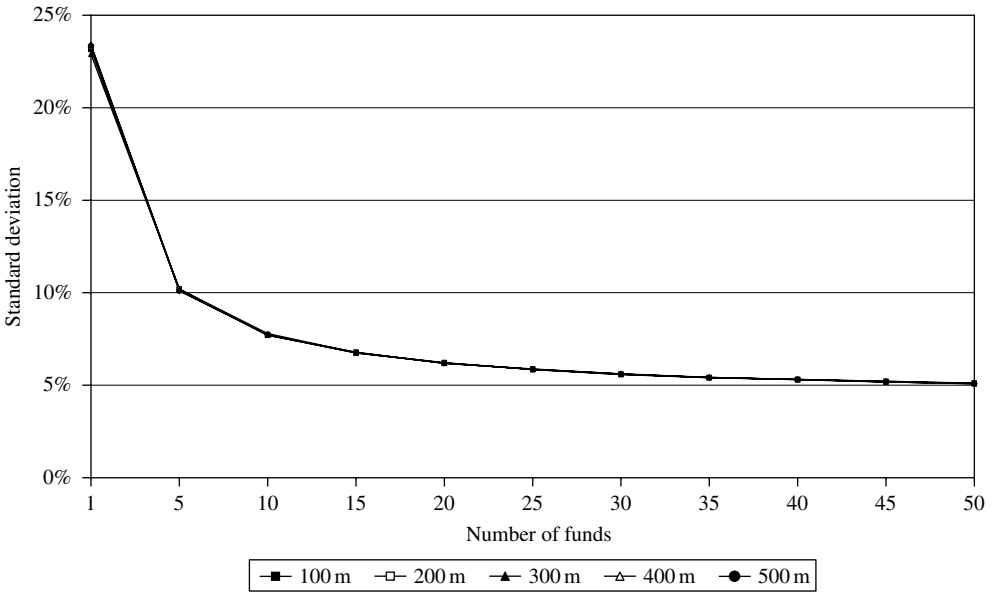
Finally, Barbara runs the simulation under several scenarios, with portfolio sizes ranging from €100 million to €500 million and diversification levels ranging from 1 to 50 funds.

### 9.1.3 Results

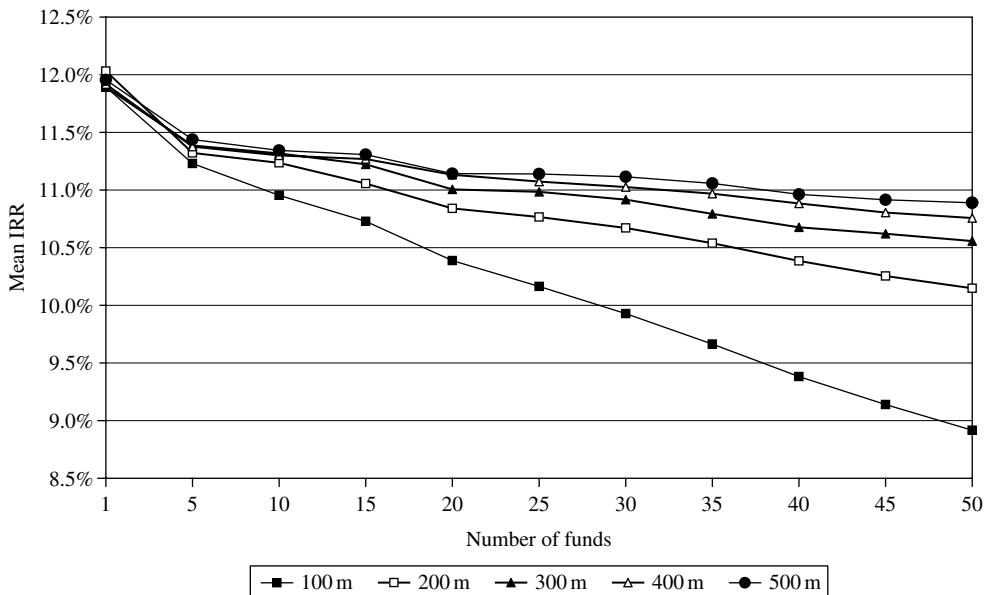
The results of Barbara’s simulations are shown in the following figures and in Table 9.3. As expected, the standard deviation declines as more funds are added in the portfolio, but is not impacted by the portfolio size (see Figure 9.1). Most of the diversification benefits occur below 20 funds, while beyond 30 funds benefits become minor.

The mean return decreases linearly as more funds are added to the portfolio (see Figure 9.2). Management costs seem to have a higher impact on small, diversified portfolios, since costs are a function of the number of investments rather than of the committed capital.

These two observations lead to the conclusion that there must be a number of investments beyond which the marginal cost exceeds the marginal benefit of diversification. As expected (see Figure 9.3), the Sharpe ratio increases up to an optimum and then starts to decrease as more funds are added to the portfolio.

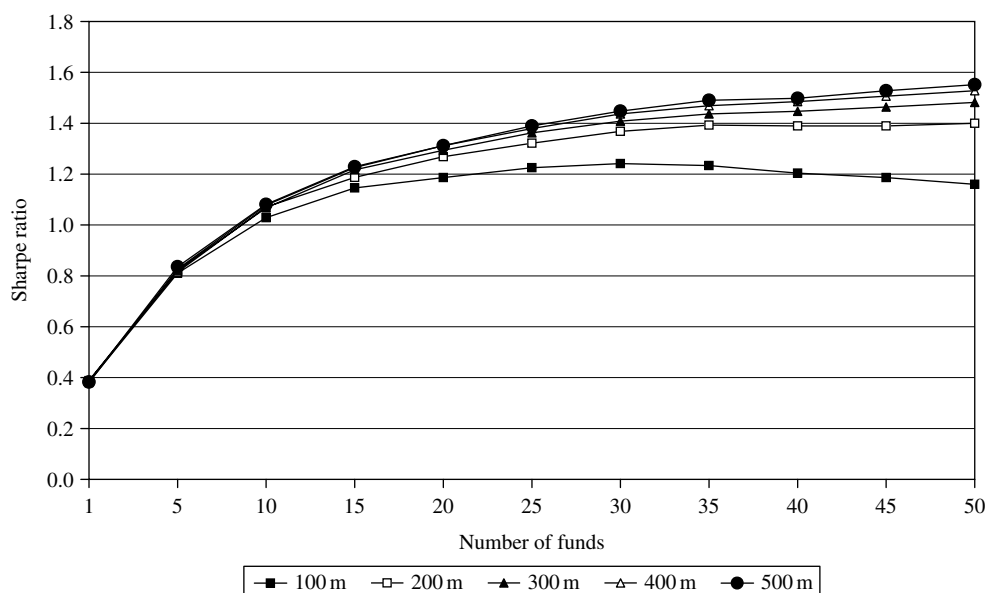


**Figure 9.1** Portfolios' standard deviation vs. number of funds



**Figure 9.2** Portfolios' mean IRR vs. number of funds





**Figure 9.3** Portfolios' Sharpe ratio vs. number of funds

The smaller the portfolio, the lower the optimal diversification level. Based on the Sortino ratio, which is favoured by Barbara<sup>5</sup> (see Figure 9.4), for a portfolio of €100 million, the optimum is reached between 10 and 20 funds, and then the ratio starts to decrease sharply. For €200–300 million portfolios, the optimum is reached between 25 and 35 funds, and for €400–500 million portfolios, between 30 and 40 funds.

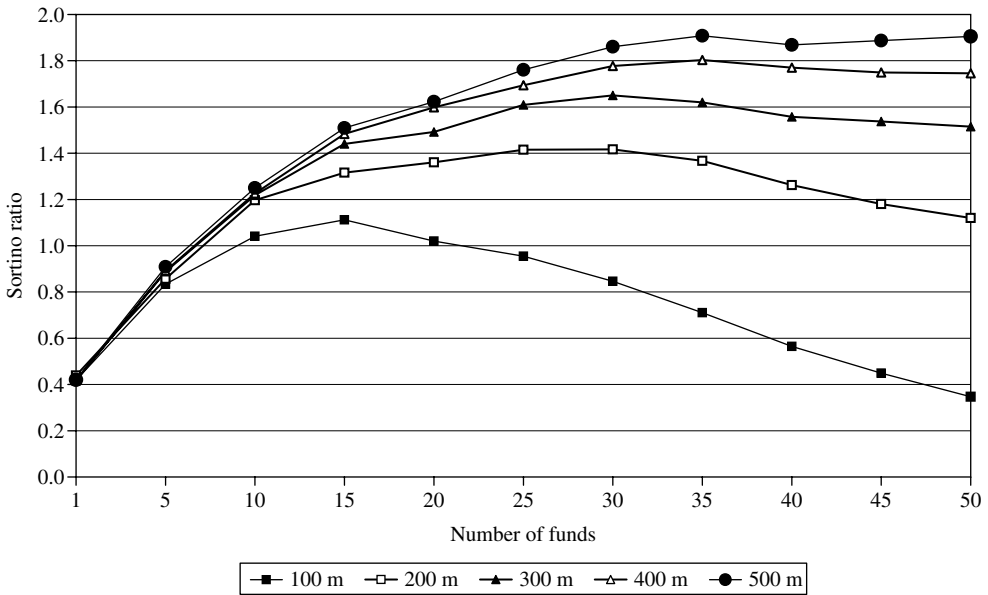
However, while diversification over this threshold is clearly harmful for smaller portfolios (up to €200 million), larger funds seem to be able to diversify beyond their optimum without much harming their ratio.

#### 9.1.4 Extension

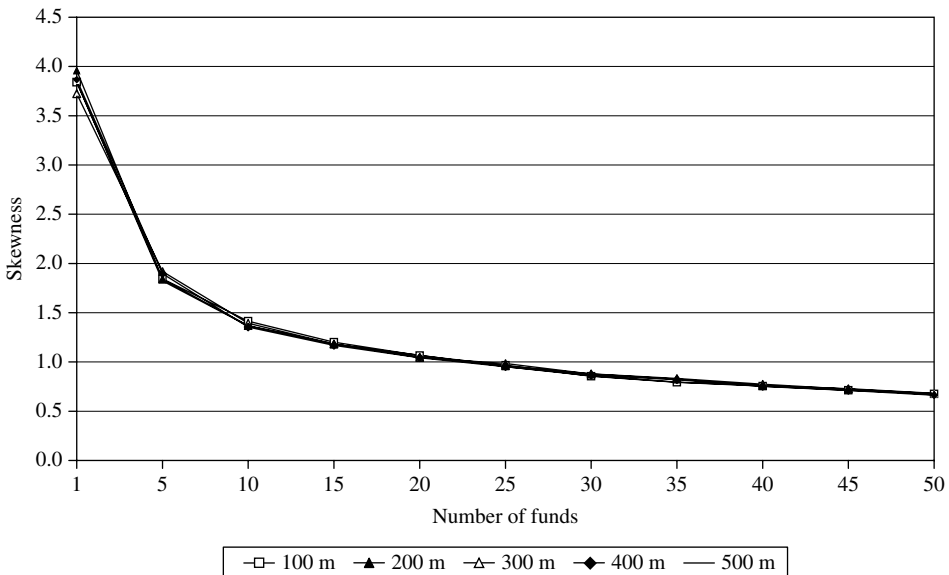
Now, Harry thinks of a second potential negative effect of over-diversification: at a low diversification level, the probability distribution function of portfolio returns is highly positively skewed, a characteristic that tends to fade away when more funds are added to the portfolio as the distribution function approaches the shape of a normal distribution. As the number of funds rises and the portfolio risk decreases, Harry reasons, not only will he incur additional costs, but also will he give up his chances to reap some extraordinary returns. Therefore, there should be an optimal diversification level corresponding to the portfolio's best skewness-to-risk ratio.<sup>6</sup> To his delight, Harry notices that Barbara took the initiative to add skewness and kurtosis of the probability distribution function to the model outputs (see Figure 9.5).

<sup>5</sup> The Sortino ratio is a variation of the Sharpe ratio, which differentiates harmful volatility from volatility in general, using a value for downside deviation. The Sortino ratio is the excess return over risk-free rate (or a certain threshold) over the downside semi-variance, so it measures the return to "bad" volatility. It is arguable that the Sortino ratio allows investors to assess risk in a better manner than simply looking at excess return to total volatility, since investors are primarily concerned with downside risk.

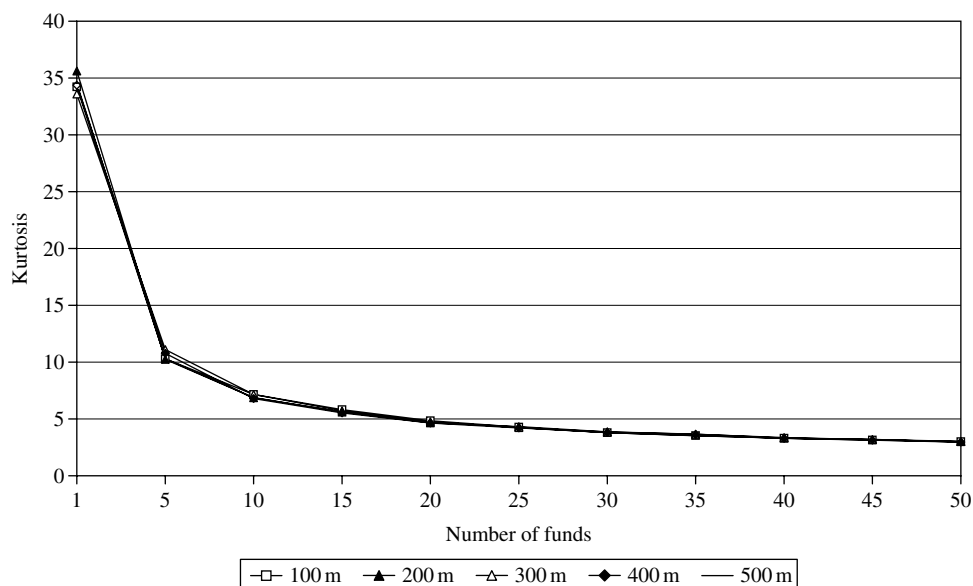
<sup>6</sup> See Appendix 9B for more details on skewness.



**Figure 9.4** Portfolios' Sortino ratio vs. number of funds



**Figure 9.5** Portfolios' skewness vs. number of funds



**Figure 9.6** Portfolios' kurtosis vs. number of funds

To compare, she proposed a simple skewness to standard deviation ratio. The data confirm Harry's intuition (see Figure 9.7): regardless of the portfolio's size, the ratio reaches an optimum between 5 and 15 funds, and then starts to decrease.

Now, Harry wondered, can we integrate the analysis of cost and skewness? He did some research and found that the utility function of a mean variance-skewness-sensitive investor can be expressed through a Taylor series.<sup>7</sup>

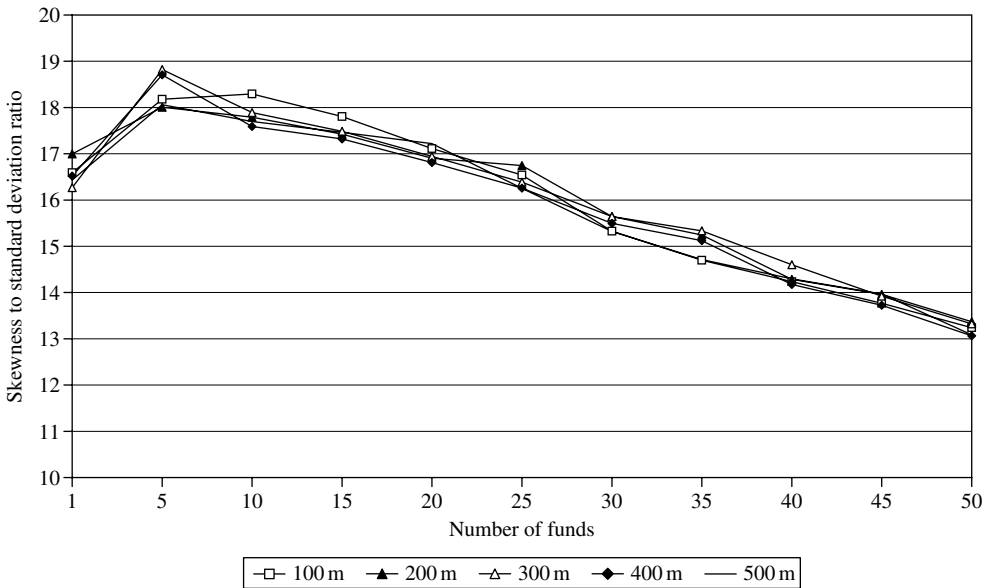
As previously observed with the Sortino ratio (see Figure 9.8), a portfolio's ratio increases up to an optimum and then starts to decrease as more funds are added in the portfolio. The smaller the portfolio, the lower the optimal diversification level. For a portfolio of €100–200 million, the optimum is reached between 5 and 15 funds, and then the ratio starts to decrease sharply. For €300–500 million portfolios, the optimum is reached between 10 and 20 funds. However, while diversification over these thresholds is clearly harmful for smaller portfolios (up to €200 million), larger funds seem to be able to diversify beyond their optimum without much harming this ratio.

### 9.1.5 Conclusion

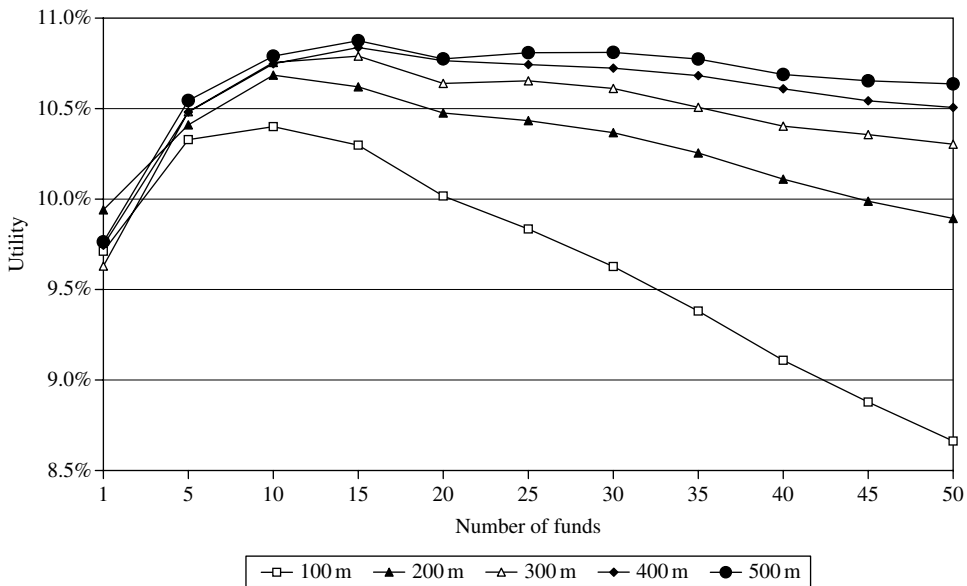
Clearly, the results indicate that there is a threshold beyond which diversification is at best useless, at worst harmful for the portfolio. And the smaller the portfolio size, the lower this threshold.

Moreover, Harry is aware of another limit to diversification, which Barbara's model does not account for. The model assumes unlimited investment capacity. However, the size of a portfolio (too many managers or too much capital) imposes a limit on diversification benefits.

<sup>7</sup> See Appendix 9C for more details on expected utility.



**Figure 9.7** Portfolios' skewness to standard deviation ratio vs. number of funds



**Figure 9.8** Portfolios' utility vs. number of funds

There are only a few top-tier funds, and these most desirable funds have limited their capital under management. To deploy large sums of capital or to diversify across too many funds, Harry would have no choice but to invest with average funds that will ultimately bring down performance.

Harry thinks of several limits to the performance predicted by the model. In Barbara's model, private equity funds are selected randomly to generate synthetic portfolios. This selection process is not realistic, due to the existence of significant "entry barriers" in the industry that make access to the best funds difficult. Given the wide dispersion between average and top-quartile returns of private equity funds, and because there is a much higher degree of repeatability of top-quartile performance in this asset class than in others, access to the best funds is critical. Harry is aware that it can take years for a new limited partner to build the reputation and relationships necessary to gain admittance to the top funds. Therefore, the performance of a "new entrant" limited partner's portfolio is likely to be lower than the one predicted by the model, maybe lower than the minimum target of 8%.

Before he meets with the board members, Harry wonders: can he build a consistent strategy for the new investment programme to overcome entry barriers in this industry and allow him to beat his minimum target return over the long term?

## 9.2 OVERCOMING ENTRY BARRIERS: LONG-TERM STRATEGIES

Harry is aware that, although he is a seasoned manager, the pension fund he is working for is a new player in the private equity industry. He will therefore have to face significant entry barriers. Furthermore, to achieve his minimum target rate of return of 8%, he knows that the access to the best fund managers is required. Harry's idea is to devise an investment strategy that would allow him to access the better funds over time, although in a diversified way to limit the idiosyncratic risk of his portfolio.

Harry has read some studies which claim that top-tier fund managers tend to maintain superior performance over the long run. Based on these findings, it is possible to build the following strategy. Due to the market entry barriers, Harry will not have access for his first investments to follow-on funds and will therefore only invest in new funds. Then, the successful new funds (i.e. the top-quartile funds<sup>8</sup>) will raise follow-on funds trying to have the support of their existing investors in order to signal their "top-tier quality" to market. Therefore, for his second generation, Harry will start to have some access to top-tier funds and will invest in them plus another pool of new funds. Over the generations, Harry will improve his access to top-tier funds, although some of them may become unsuccessful.

Harry wants to investigate this idea, and for that purpose needs to gather additional data.

### 9.2.1 Data

Harry decides to use the same database as in his previous work. In addition to performance data, however, he requests the following information:

- The distinction between new funds and follow-on funds.<sup>9</sup>
- The distinction between top-quartile funds (i.e. top performers) and other funds. In the database, quartile ranking is done by vintage year and by asset class (venture capital or buyout funds).

Again, he calls Barbara to model his ideas.

---

<sup>8</sup> When a fund manager decides to raise a follow-on fund, the final performance of the previous fund is not yet known. Here Barbara assumes that the interim IRR allows identifying the top-quartile funds.

<sup>9</sup> "New funds" are the first fund a management group raises together. "Follow-on funds" are subsequent funds (II, III, IV, etc.) raised by the same management group.

### 9.2.2 Modelling

Barbara's new model is similar to the previous one. The user specifies the desired number of funds for his portfolio, the average commitment to new unproven funds, and to his former generation's best managers' follow-on funds.

As done previously, and although the programme is evergreen, she slices the programme into generations of 4 years and assumes that, on average, teams raise new funds every 4 years. Barbara mimics this behaviour in her model. For the first generation, she assumes that they cannot access the proven top-tier funds. The model picks funds randomly in the new funds population. Some funds end up in first quartile. At the next fund-raising cycle, the model selects all the follow-on funds of the top-quartile first-generation funds and the remaining number in the pool of new funds, and so on for five generations. This process is repeated as many as 10,000 times.

#### Box 9.1: Random pick

Inspired by Burton Malkiel's book, *A Random Walk Down Wall Street*, in 1988 the *Wall Street Journal* launched its now famous "Dartboard Contest". Malkiel suggested that "*a blindfolded monkey throwing darts at a newspaper's financial pages could select a portfolio that would do just as well as one carefully selected by experts*". In the contest *Wall Street Journal* staff members play the role of the monkeys. Their randomly picked portfolios are compared with portfolios picked by professional investment managers. At the end of 6 months, the price appreciation, excluding dividends, for the "pro's" stocks and the dartboard stocks are compared, and surprisingly often—in 100 contests 39% of the cases—the "darts" won.

A naïve approach to study investment strategies would be based on such "random picks" as the benchmark to demonstrate the superiority of certain strategies. For private equity funds such techniques need to be taken with a large "grain of salt", as not all managers are known, not all known managers are fund-raising, and not all managers raising funds will accept an investor. Especially top performers, are not looking for new limited partners and often restrict access for investors.

We do not know what investment behaviour is consistent with the random pick algorithm used in the simulations. To illustrate the point: you cannot compile the times that were clocked over the 100 m in all Olympic games and, from these statistics, draw the conclusion that it is a relatively safe bet that any 30 persons you meet in the street will, on average, be able to sprint this distance below 11 seconds. Most probably it is still the alpha-seeking approach, where a rigorous due diligence is employed to filter out the best fund proposals. In short, and probably to the greatest relief of the WWF, in private equity one cannot use monkeys.

Any simulation therefore needs to start with an analysis of the investor's "footprint": what funds does the investor know and can get access to? In our scenarios, we simplistically assume that an inexperienced investor initially cannot get access to the best funds. This, of course, is debatable, as even first-time funds—to which one can get access more easily—often enough perform in the top quartile. However, it gives a kind of restriction to the population within which one can do the random selection. In any case, the footprint will solely depend on the individual investor and will require a specific analysis.

To model the entry barriers and the selection skills, Barbara improves her model by ranking the funds by performance (percentiles) and vintage years and has made the following assumptions:

- To account for *entry barriers*, the model assumes that funds in the two top deciles cannot be picked. This restriction does not exist for follow-on funds.
- To account for *selection skills*, the model assumes that the two worst deciles' follow-on funds can be avoided. This restriction does not exist for new funds.

Barbara also lets the model consider the possibility of a learning curve in terms of picking skills. As stated before, selection skills are more likely to let us avoid worst funds than gain access to top funds. At each next generation, the lower boundary increases and more poorly performing funds can be avoided. Based on her previous research, she decides to create portfolios of 20 funds or more to limit the risks, while keeping a sufficient upside. To further refine the strategy, she designs four different scenarios:

- *Scenario 1.* Maintain the total number of new funds constant to 20 and commit the same amount to new and follow-on funds (€1 million).
- *Scenario 2.* Maintain the total number of funds constant to 20 (i.e. investments in follow-on funds is at the detriment of new funds) and commit the same amount to new and follow-on funds (€1 million).
- *Scenario 3.* Maintain the total number of new funds constant to 20 and commit 10 times more to follow-on funds (€1 million for new funds and €10 million to follow-on funds).
- *Scenario 4.* Maintain the total number of funds constant to 20 (i.e. investments in follow-on funds is at the detriment of new funds) and commit 10 times more to follow-on funds (€1 million for new funds and €10 million to follow-on funds).

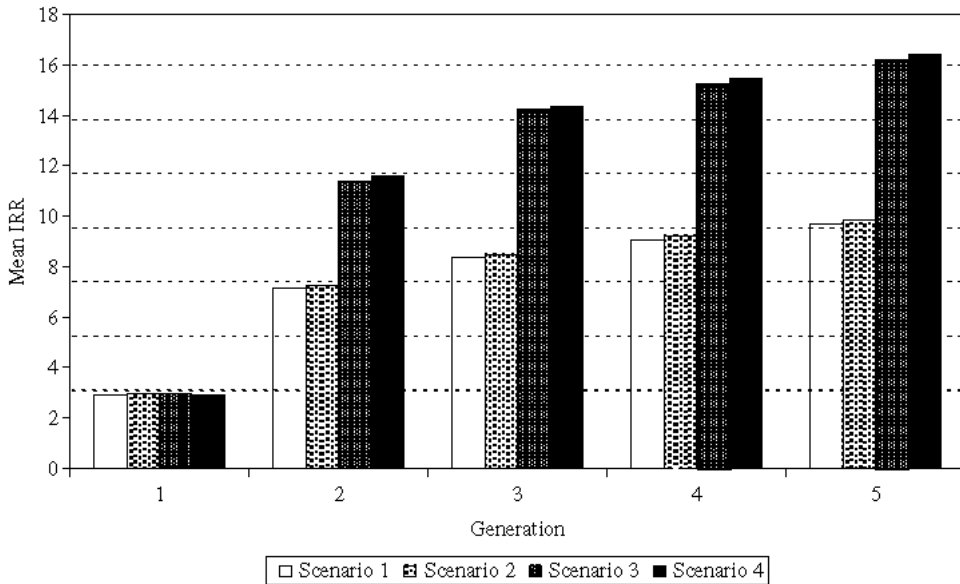
### 9.2.3 Results

The results of Barbara's simulations are shown in Figure 9.9 and in Table 9.4 at the end of the chapter. As expected, for all scenarios, the portfolio's performance improves over the generations. The steepest increase takes place between the first and the second generation. While the total number of funds and its split between new and follow-on funds seems to have virtually no impact on the portfolio's performances, it appears that an overweighting of the commitments to the follow-on funds significantly improves the final performance.

### 9.2.4 Conclusion

These simulations illustrate the importance of a pool of new, unproven funds as a "nest" for future top performers. Taking into account the existing market entry barriers, the model shows that it will take at least one fund-raising cycle, i.e. 4 years, to be able to create a portfolio with an expected performance above the minimum return of 8% requested by the board of administration. Furthermore, Harry also knows that such a performance will only be achievable if he signs larger tickets for the follow-on funds (see Scenarios 3 and 4).

Moreover, Harry is also aware of the "generational issues", i.e. that the industry will see a turnover among general partners every three to four fund-raising cycles, as founders, whose names are often associated with the branding of many firms, are beginning to retire or are no



**Figure 9.9** Overcoming the entry barriers—long-term strategies

longer working full-time. This issue of succession is particularly pertinent to private equity because it is such a long-term commitment. As top performers drop out of the market, new teams will replace them. For these reasons Harry knows that he will always have to invest in a pool of new, unproven funds to maintain his pool of top performers constant.

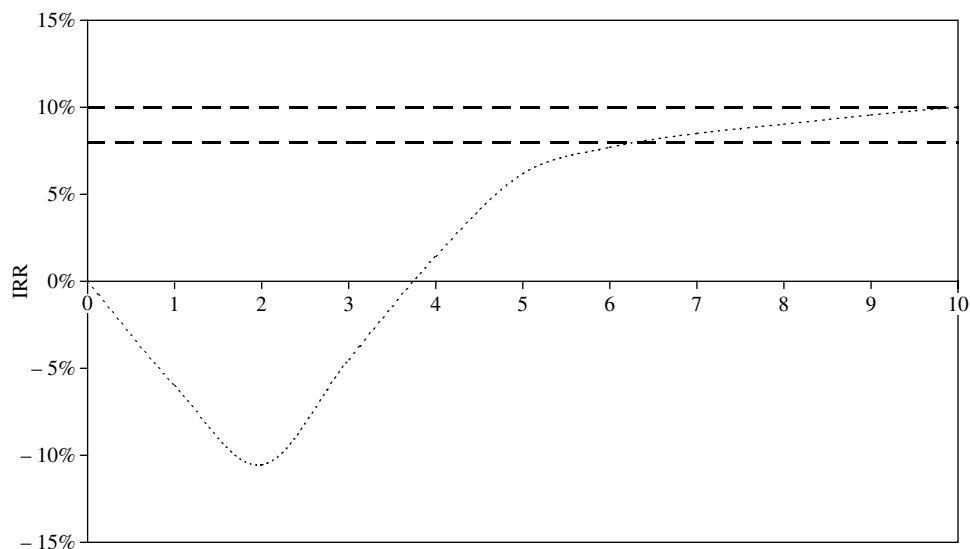
Harry now has all the elements to go back to his board and present his views about the setting-up of the newly decided private equity investment programme. It is Friday today and Harry thinks that it would be a good idea to invite Barbara for lunch at the newly opened French brasserie. Having both worked intensively this week, they decide not to talk about any business-related issue and take some foie gras as a starter with a delicious sweet white wine from the Alsace region. Harry is a great fan of all that is related to the sea, and tells Barbara that this weekend he will most likely go sailing. Barbara likes to do some sport too, but this weekend, she will have no time, as her son, John, will be participating to a hockey tournament. Suddenly, Harry who cannot really stop thinking about the new programme, makes the link between hockey and the famous “hockey stick” or “J-curve”.

Indeed, the common practice of paying the management fees and start-up costs out of the first drawdowns normally results in initial negative returns. Then, with the follow-on rounds of funding and when the first exits are made, the fund returns rise. Knowing that his board has no previous experience with private equity, Harry thinks that it is important to bring to their attention that the final expected return of his programme, as estimated before, will not be reported directly and that it may take several years before the 8% target return is achieved. Therefore, he asks Barbara, as a last effort before reverting to the board, to estimate a standard J-curve for a fund but also for the portfolio.

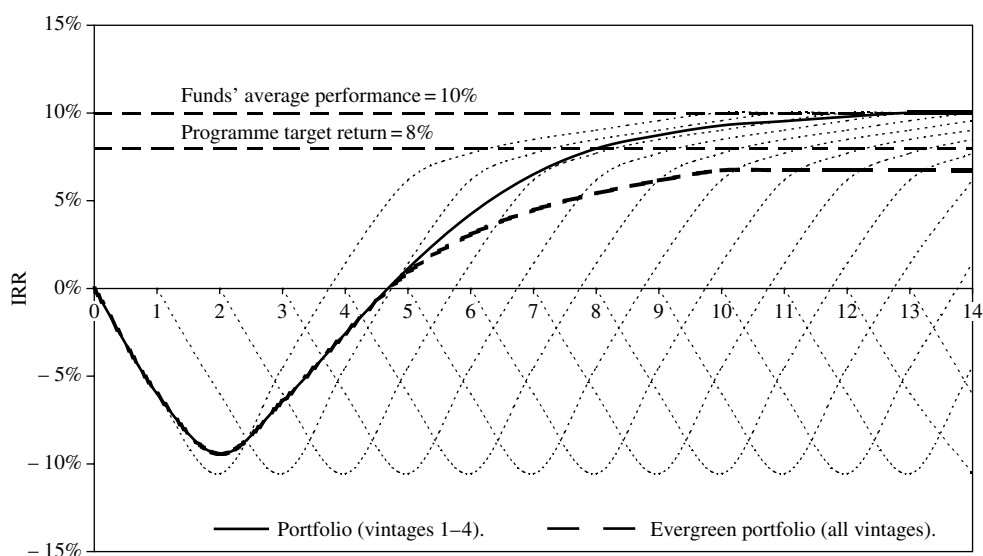
She uses the same data as the one used in her model and comes back with the following results (see Figures 9.10 and 9.11).

For a fund, it normally takes 3–4 years to report a positive performance and it takes more than 6 years to be above the 8% target return.





**Figure 9.10** Fund standard J-curve



**Figure 9.11** Portfolio standard J-curve

For the programme, which is equivalent to an evergreen portfolio, she simply decided to estimate its J-curve with a simplified portfolio composed of one standard fund for each year, with the same amount committed every year. Not surprisingly, the time to report positive and above target return is even longer (see Figure 9.11). For a portfolio investing only in the first 4 vintage years, it takes normally 4–5 years to report a positive performance and almost 8 years to be above the 8% target return. And for the programme, it also takes 4–5 years

**Table 9.3** Portfolio optimisation results

Scenario: Realistic selection (multiple draws allowed)  
 Market: Europe  
 No. of runs: 100,000  
 Inv. period: 4  
 Inv. focus: All private equity

Risk aversion coefficient = 2  
 Skewness preference coefficient = 4  
 Kurtosis aversion coefficient = 0  
 Minimum acceptable return = 8%  
 Riskfree rate = 3%

# Funds	Mean incl. costs (%)	Std Dev (%)	Semi Dev (%)	Skew	Kurtosis	Sharpe	Sortino	Skewness/Std Dev	Utility (%)
---------	-------------------------	----------------	-----------------	------	----------	--------	---------	---------------------	----------------

## Portfolio size: €100 million

1	11.9	23.2	9.3	3.84	34.23	0.38	0.42	16.59	9.7
5	11.2	10.1	3.9	1.84	10.30	0.81	0.83	18.18	10.3
10	11.0	7.7	2.8	1.41	7.16	1.03	1.04	18.29	10.4
15	10.7	6.7	2.5	1.20	5.82	1.15	1.11	17.81	10.3
20	10.4	6.2	2.3	1.07	4.84	1.19	1.02	17.11	10.0
25	10.2	5.8	2.3	0.97	4.28	1.23	0.95	16.54	9.8
30	9.9	5.6	2.3	0.86	3.79	1.24	0.85	15.33	9.6
35	9.7	5.4	2.3	0.79	3.53	1.23	0.71	14.70	9.4
40	9.4	5.3	2.5	0.75	3.30	1.20	0.56	14.24	9.1
45	9.1	5.2	2.5	0.71	3.14	1.19	0.45	13.77	8.9
50	8.9	5.1	2.6	0.68	3.01	1.16	0.35	13.24	8.7

## Portfolio size: €200 million

1	12.0	23.3	9.2	3.96	35.61	0.39	0.44	17.00	9.9
5	11.3	10.2	3.9	1.84	10.25	0.82	0.86	18.01	10.4
10	11.2	7.7	2.7	1.37	6.86	1.07	1.20	17.79	10.7
15	11.1	6.8	2.3	1.18	5.61	1.19	1.32	17.43	10.6
20	10.8	6.2	2.1	1.04	4.66	1.27	1.36	16.90	10.5
25	10.8	5.9	2.0	0.98	4.32	1.32	1.42	16.75	10.4
30	10.7	5.6	1.9	0.88	3.86	1.37	1.42	15.64	10.4
35	10.5	5.4	1.9	0.83	3.66	1.39	1.37	15.25	10.3
40	10.4	5.3	1.9	0.76	3.32	1.39	1.26	14.29	10.1
45	10.3	5.2	1.9	0.73	3.18	1.39	1.18	13.96	10.0
50	10.1	5.1	1.9	0.68	3.03	1.40	1.12	13.37	9.9

## Portfolio size: €300 million

1	11.9	22.9	9.3	3.72	33.60	0.39	0.42	16.27	9.6
5	11.4	10.2	3.8	1.92	11.11	0.82	0.89	18.82	10.5
10	11.3	7.8	2.7	1.39	7.15	1.07	1.22	17.89	10.8
15	11.2	6.8	2.2	1.18	5.71	1.22	1.44	17.49	10.8
20	11.0	6.2	2.0	1.05	4.76	1.29	1.49	16.94	10.6
25	11.0	5.9	1.9	0.96	4.23	1.36	1.61	16.39	10.7
30	10.9	5.6	1.8	0.88	3.86	1.41	1.65	15.64	10.6
35	10.8	5.4	1.7	0.83	3.65	1.44	1.62	15.34	10.5
40	10.7	5.3	1.7	0.77	3.36	1.45	1.56	14.60	10.4
45	10.6	5.2	1.7	0.72	3.18	1.46	1.54	13.92	10.4
50	10.6	5.1	1.7	0.68	3.01	1.48	1.52	13.32	10.3

## Portfolio size: €400 million

1	11.9	23.4	9.4	3.87	34.37	0.38	0.42	16.52	9.7
5	11.4	10.1	3.8	1.90	10.78	0.83	0.89	18.71	10.5
10	11.3	7.7	2.7	1.35	6.80	1.08	1.23	17.59	10.7
15	11.3	6.7	2.2	1.17	5.53	1.23	1.48	17.32	10.8

**Table 9.3** (Continued)

# Funds	Mean incl. costs (%)	Std Dev (%)	Semi Dev (%)	Skew	Kurtosis	Sharpe	Sortino	Skewness/Std Dev	Utility (%)
20	11.1	6.2	2.0	1.04	4.64	1.31	1.60	16.81	10.8
25	11.1	5.9	1.8	0.95	4.22	1.38	1.69	16.26	10.7
30	11.0	5.6	1.7	0.87	3.81	1.44	1.78	15.49	10.7
35	11.0	5.4	1.6	0.82	3.61	1.47	1.80	15.12	10.7
40	10.9	5.3	1.6	0.75	3.29	1.49	1.77	14.17	10.6
45	10.8	5.2	1.6	0.71	3.14	1.51	1.75	13.72	10.5
50	10.8	5.1	1.6	0.66	2.96	1.53	1.75	13.06	10.5
Portfolio size: €500 million									
1	12.0	23.4	9.4	3.84	34.53	0.38	0.42	16.43	9.8
5	11.4	10.1	3.8	1.82	10.30	0.84	0.91	18.06	10.5
10	11.3	7.7	2.7	1.37	6.89	1.08	1.25	17.70	10.8
15	11.3	6.8	2.2	1.18	5.60	1.23	1.51	17.46	10.9
20	11.1	6.2	1.9	1.07	4.75	1.31	1.62	17.22	10.8
25	11.1	5.9	1.8	0.95	4.24	1.39	1.76	16.25	10.8
30	11.1	5.6	1.7	0.86	3.79	1.45	1.86	15.32	10.8
35	11.1	5.4	1.6	0.80	3.51	1.49	1.91	14.71	10.8
40	11.0	5.3	1.6	0.76	3.31	1.50	1.87	14.30	10.7
45	10.9	5.2	1.5	0.72	3.20	1.53	1.89	13.97	10.7
50	10.9	5.1	1.5	0.67	2.96	1.55	1.90	13.08	10.6

**Table 9.4** Portfolio long-term Strategies results

Scenario: Random selection

New Funds Access (Upper bound) = 0.800

Market: Europe

Top Funds Access (Upper bound) = 1.000

No. of runs: 10,000

Inv.focus: All private equity

Generation	Average performance	Average no. of new funds	Average no. of top funds	Pick skill learn curve	New funds pick skill (low bound)	Top funds pick skill (low bound)
Scenario 1: At each generation, reinvest in past top funds plus a pool of new funds. Maintain the total number of new funds constant. Commit €1 million per new fund and €1 million per past top fund						
1	2.93	20.00	0.00	0.100	0.000	0.200
2	7.13	20.00	1.80	0.050	0.100	0.250
3	8.38	20.00	2.90	0.033	0.150	0.283
4	9.05	20.00	3.60	0.025	0.183	0.308
5	9.68	20.00	4.00	0.020	0.208	0.328
Scenario 2: At each generation, reinvest in past top funds plus a pool of new funds. Maintain the total number of funds constant. Commit €1 million per new fund and €1 million per past top fund						
1	2.97	20.0	0.0	0.100	0.000	0.200
2	7.26	18.2	1.8	0.050	0.100	0.250
3	8.50	17.3	2.7	0.033	0.150	0.283
4	9.24	16.8	3.2	0.025	0.183	0.308
5	9.88	16.5	3.5	0.020	0.208	0.328

Scenario 3: At each generation, reinvest in past top funds plus a pool of new funds.  
 Maintain the total number of new funds constant. Commit €1 million per  
 new fund and €10 million per past top fund

1	2.95	20.00	0.00	0.100	0.000	0.200
2	11.38	20.00	1.80	0.050	0.100	0.250
3	14.18	20.00	2.90	0.033	0.150	0.283
4	15.25	20.00	3.60	0.025	0.183	0.308
5	16.17	20.00	4.00	0.020	0.208	0.328

Scenario 4: At each generation, reinvest in past top funds plus a pool of new funds.  
 Maintain the total number of funds constant. Commit €1 million  
 per new fund and €10 million per past top fund

1	2.93	20.0	0.0	0.100	0.000	0.200
2	11.61	18.2	1.8	0.050	0.100	0.250
3	14.37	17.3	2.7	0.033	0.150	0.283
4	15.49	16.8	3.2	0.025	0.183	0.308
5	16.45	16.5	3.5	0.020	0.208	0.328

to report a positive performance, while the programme never reaches the target minimum return. These observations reinforce Harry's opinion that the programme should be managed as a succession of funds-of-funds or generation of 4 years.

## APPENDIX 9A: FORMULAE

**Table 9.5** Formulae

Item	Formula
Portfolio's expected final return ( $\bar{x}$ ) or $E(r)$	$\frac{1}{n} \sum_{i=1}^n x_i - Cost_p$ <p>where <math>x_i</math> is the final return of the fund <math>i</math>, <math>n</math> is the number of funds and <math>Cost_p</math> is the portfolio's management costs, as explained in Section 9.1.1</p>
MAR	Minimum acceptable return (8% IRR, or 1.5 TVPI in this case)
Standard deviation ( $\sigma$ )	$\sqrt{\frac{\sum_{i=1}^n (x_i - \bar{x})^2}{n}}$
Semi-deviation	$\sqrt{\frac{\sum_{i=1}^n [\max(0, MAR - x_i)]^2}{n}}$
Skewness	$\frac{\sum_{i=1}^n (x_i - \bar{x})^3}{n \sigma^3}$

**Table 9.5** (Continued)

Item	Formula
Kurtosis	$\frac{\sum_{i=1}^n (x_i - \bar{x})^4}{\frac{n}{\sigma^4}}$
Sharpe ratio	$\frac{E(r) - R_f}{\sigma}, \text{ where } R_f \text{ is the risk-free rate.}$
Sortino ratio	$\frac{E(r) - MAR}{\text{Semi-deviation}}$

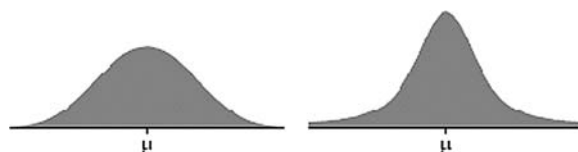
## APPENDIX 9B: SKEWNESS AND KURTOSIS

*Skewness* is a parameter that describes asymmetry in a random variable's probability distribution. Both probability density functions in Figure 9.12 have the same mean and standard deviation, but the one on the left is positively skewed, while the one on the right is negatively skewed. The skewness for a normal distribution is zero, and any symmetric data should have skewness near zero.

The skewness of a distribution is calculated as:

$$\text{skewness} = \frac{\sum_{i=1}^n (x_i - \bar{x})^3}{\frac{n}{\sigma^3}}$$

*Kurtosis* is a measure of whether the data are peaked or flat relative to a normal distribution. Normal distributions have a kurtosis of 3. Leptokurtosis (kurtosis greater than 3) is associated with distributions that are simultaneously peaked and have fat tails. Platykurtosis (kurtosis lower than 3) is associated with distributions that are simultaneously less peaked and have thinner tails. Both probability density functions in Figure 9.13 have the same mean and standard deviation, but the distribution on the left is platykurtic, while the one on the right is leptokurtic.

**Figure 9.12** Skewness**Figure 9.13** Kurtosis

The kurtosis of a distribution is calculated as:

$$kurtosis = \frac{\sum_{i=1}^n (x_i - \bar{x})^4}{n \sigma^4}$$

## APPENDIX 9C: EXPECTED UTILITY

The expected utility is a probability density function (pdf), which has four moments: mean, variance, skewness and kurtosis. The investor's utility can be expressed with a Taylor series, such as:

$$U(r) = E(r) - \frac{1}{2!} * A * variance + \frac{1}{3!} * B * skewness - \frac{1}{4!} * C * kurtosis$$

where:

- Expected return is desirable, hence the positive sign.
- Variance of return is undesirable, hence the negative sign ( $A$  = risk aversion coefficient, typically 2–4). Barbara sets the coefficient to 4.
- Positive skewness is desirable, negative skewness is undesirable, hence the positive sign ( $B$  = skewness preference coefficient).
- Excess kurtosis above 3 indicates a more peaked distribution, with fatter tails than normal. Generally kurtosis is undesirable, hence the negative sign. In this case, however, it is not clear. In doubt, Barbara sets the coefficient to zero ( $C$  = kurtosis aversion coefficient).

If the pdf is normal, it has no skewness ( $skewness = 0$ ) and no excess kurtosis ( $kurtosis = 3$ ). Investor's utility is affected only by mean and variance, and the optimisation process looks for a mean variance-efficient portfolio. If the pdf is non-normal, as in private equity, the investor may be sensitive to the other two moments (skewness and kurtosis). The optimisation process looks for a mean variance–skewness–kurtosis-efficient portfolio.



## The Management of Liquidity\*

Investments in private equity funds have proved to be risky for a number of reasons, especially the long time frame of the investment and the lack of liquidity. The high degree of uncertainty regarding timing of cash flows renders venture capital funds an exceptional challenge. Estimates for cash flows are based on historical data, such as experience from existing deals. Modelling such investments is an important part of the management process.

We see the management of the liquidity of a private equity investment programme in a wider context: it is not sufficient only to consider questions associated with typical treasury management (which will not be specifically touched upon here). The management of undrawn capital, i.e. capital in form of commitments and repayments temporarily not re-invested in private equity funds, is critical for achieving a high total return on the resources dedicated to private equity investment. As it is a challenge to keep fully—or even close to fully—invested in private equity, a significant share of the dedicated resources could remain “idle”. To optimise their use, a trade-off between generating a good investment return while maintaining a reasonable degree of liquidity needs to be found. The objective of this chapter is to describe the various approaches to managing liquidity for a private equity fund investment programme, and their risks and trade-offs.

We simplistically assume that, during the running of the programme, the objective is to keep the commitment level as constant as possible and that the manager of the private equity investment programme controls the repayment of capital to the mandators. It is critical that the contractual arrangements between mandators and the programme manager foresee some degree of flexibility. A stringent repayment schedule required under a payout plan or under a debt-financed fund-of-funds requires a high certainty regarding the liquidity and therefore carries a substantial price for the fund-of-funds. For fixed repayment schedules, the same complexities arise as with collateralised fund obligations. Meeting regular repayment targets requires significant liquidity buffers to compensate for longer periods without distributions from funds. The payout or the interest payments on debt would become an additional use of liquidity, and typically result in even higher cash requirements.

### 10.1 LIQUIDITY MANAGEMENT PROBLEM

The management of a private equity fund investment programme’s liquidity needs to take into account interdependencies among the overall investment strategy, the management of the undrawn capital, the available resources and timing aspects. Therefore, achieving a

---

\* We are grateful to Juan Delgado-Moreira PhD, CFA, Baring Private Equity Partners, and Dr Michael Jean Gschrei of Dr Gschrei & Associates GmbH for their valuable comments and suggestions. The views expressed in this chapter are ours and are not necessarily shared by them.



high total return<sup>1</sup> for the overall investment programme is a complex task that requires not only quantitative modelling and financial engineering skills, but also a high degree of judgement and management discipline. There is no quick fix for this, and only a disciplined approach can lead to small improvements that eventually add up to have a significant impact.

So far, little<sup>2</sup> has been published on this subject and the importance of the associated problems appears to be underestimated. For large institutional investors with mature portfolios of diversified private equity fund investments, this may indeed be less of an issue. Their programmes are typically already cash-generating and well diversified over time. As we will see in the following, this also aids the liquidity management. Often for such large investors private equity forms only an immaterial part of the balance sheet, and other assets can always be reasonably quickly turned into cash. Whether in this situation private equity can have a sufficient impact on the efficient frontier of the portfolio of all assets under management may be a different question. They are also able to supplement their private equity holdings with other asset classes with a matching statistical draw-down/repayment pattern, such as real estate or hedge funds.

But for institutions trying to set up a significant private equity investment programme from scratch, the associated complexity and risks can become a high entry barrier. As a result, it is likely to take many years before this investment programme is able to reach sustainable high total return levels. Mistakes made at an early stage of the investment programme may have severe consequences in the medium term. It is a difficult task to steer between putting money efficiently to work and maintaining a balance in the portfolio composition and the quality of the individual fund investments.

In private equity the limited partners first make a commitment to a private equity fund, and the committed capital is requested or drawn down by the general partners from investors on a deal-by-deal basis in order to finance the investments or as needed for the various fees or expenses. The upside of this method from the institutional investors' perspective is that the share of the profits going to the private equity fund is limited to the size of the capital actually invested and of the term of that investment. The private equity fund's IRR is based on capital contributions to and distributions from the fund, and not just the capital amount committed by its investors. There is no contractual arrangement that the general partner will return a specified amount over a given period. Moreover, there is usually a substantial lag between the time at which capital is committed to a private equity fund and the time at which that capital is drawn down for investment.

Management of the liquidity forms a critical component of total return. Liquidity is the availability of cash, or assurance that cash will be made available, to honour all capital calls related to private equity fund investments as they fall due. In other words, the management of the liquidity aims to assure that sufficient cash, but not much more, is available to meet capital calls, while contributing to the total return of the overall investment programme. The IRR for a private equity fund will not be the same as the total return on the "block" of capital committed to the fund.<sup>3</sup> Published return statistics for private equity can therefore only give an incomplete picture of the investment returns realised by the limited partners.

<sup>1</sup> For a discussion on valuation, see Chapters 11 and 16, and on performance measurement, see Chapter 12.

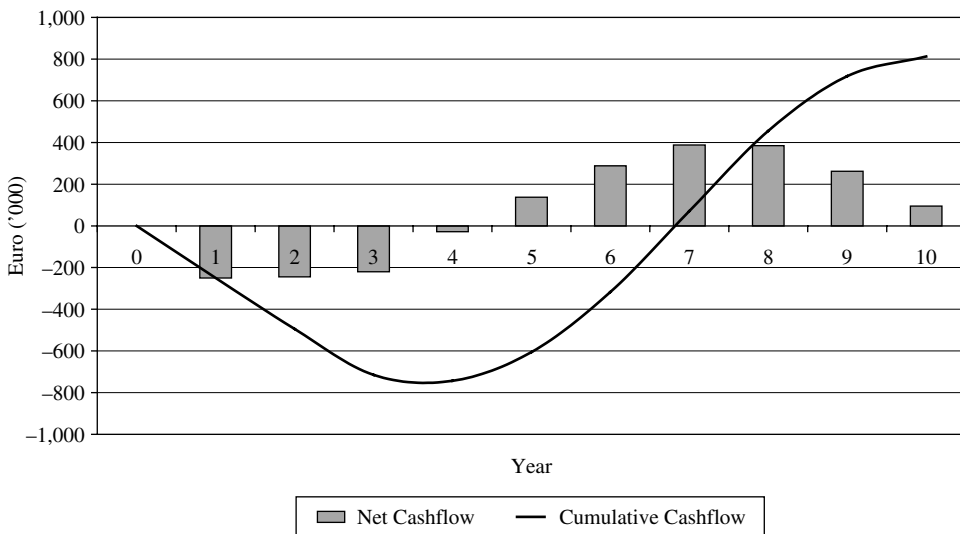
<sup>2</sup> Kogelman (1999) and Meyer & Gschrei (2005) are some of one of the few publications.

<sup>3</sup> Also, the Basel Committee on Banking Supervision requires that undrawn commitments be risk-weighted ([http://www.bis.org/bcb/qis/qis3qa\\_o.htm](http://www.bis.org/bcb/qis/qis3qa_o.htm)).

### 10.1.1 Modelling

For illustration of the problem, we discuss three scenarios in the following. We base our examples on the “Yale model” proposed by Takahashi & Alexander (2001) from the Yale University Investments Office. They developed this model for scenario analysis (see below) in the context of their alternative investment programme. Albeit a simplified model of the average limited partnerships main liquidity streams,<sup>4</sup> it is a theoretically sensible tool for estimating cash-flows and future exposure, for assessing the impact of changing fund commitment levels and varying assumptions regarding contributions, distributions and underlying net returns. Under the following scenario €1m are committed for investments into a private equity fund that generates an IRR of 15% (see Figure 10.1):

The fund manager will not be able to invest all investments on day one, and the limited partners are going to get calls for capital at unpredictable times. Also, the size of capital calls is not known until announced, and these calls may extend over the whole fund’s lifetime but mainly over the investment period of 3–5 years. Although capital commitments are seldom fully drawn down, fund managers may draw down capital for investments many times during the fund’s investment period and also for follow-on financing. The partnership agreement specifies the deadline—typically 2 weeks—for responding to capital calls. As the consequences of failing to meet a capital call can be severe, adequate liquidity is critical. Distributions from the fund to its investors in the form of capital repayments and profits set in years later after the fund’s inception. Their timing is generally even less predictable.



**Figure 10.1** Private equity fund scenario (A)

<sup>4</sup> In its original form, the model only offers limited differentiation between the various liquidity streams. However, it can be easily expanded so that it can capture more details, such as different profiles of management fees. Of course “average” fund experience varies greatly, depending on the time period (see below, section on scenario analysis). Prospective investment environments do not necessarily resemble any historical period; but applications like the Yale model can capture scenarios and support “what-if” analysis.

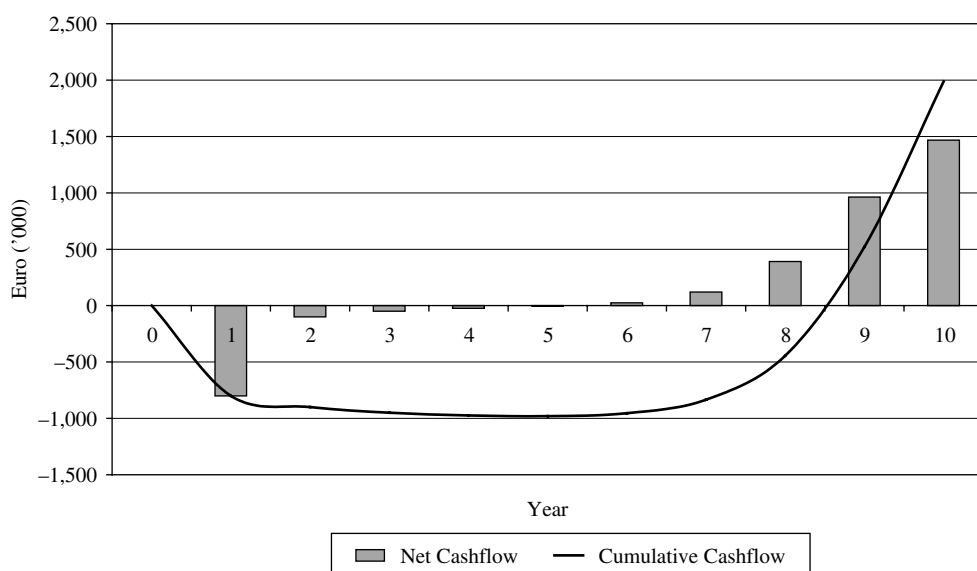
### 10.1.2 Impact of liquidity returns

As one can see from the example, only a limited fraction of the amounts invested is immediately put to work.<sup>5</sup> Moreover, the full commitment is generally never fully drawn and most funds ultimately request a maximum of 80–95% of the committed capital. In the case described in scenario (A), less than €750,000 is actually invested. Managing on a commitment basis blurs the fact that there remains significant idle liquidity. Assuming a typical treasury return of, say, 4% for the undrawn commitments and repaid amounts, the total return achieved on the commitment for the fund in this example would be 10.6% vs. a 15% IRR, which is certainly not bad, but clearly not unlocking the full potential of private equity investing. The total return would be equal to the IRR in two hypothetical situations:

- If both undrawn capital and all distributions from the fund could be invested at the same return as that generated by the private equity fund.
- 100% of the commitment would be invested in the private equity fund on day 1 and fully repaid on the last day. In this situation there would be no undrawn commitments at all.

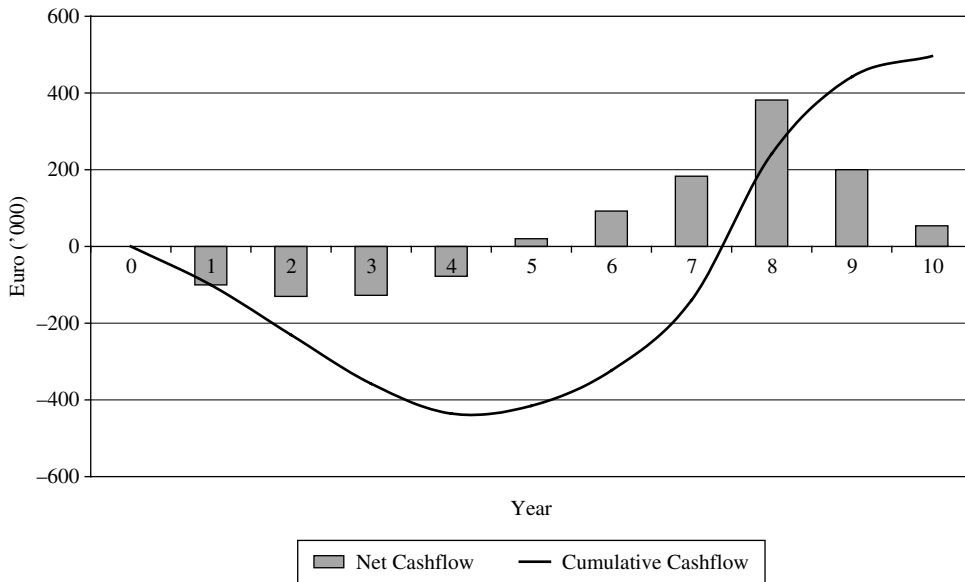
Instead of analysing this unrealistic situation, we take a look at an accelerated schedule, as described in the next scenario (B) (see Figure 10.2).

For illustration, the same timeframe as in scenario (A) is assumed for this second private equity fund. Also this fund generates an IRR of 15%. Again, assuming a treasury return of 4% for the undrawn commitments and the repaid amounts, the total return achieved on the commitment for the fund in this example would be 13.3%. Finally, it is rather the periods



**Figure 10.2** Private equity fund scenario (B)

<sup>5</sup> It has to be kept in mind that the general partners also have a strong incentive to put as much capital as possible effectively to work, as they participate in the carried interest.



**Figure 10.3** Private equity fund scenario (C)

of slow investment pace that concern investors. Scenario (C) describes such an environment (see Figure 10.3).

Again, for illustration, the private equity fund in scenario (C) covers a similar timeframe as the previous examples and also generates an IRR of 15%. Assuming the same treasury return of 4% for the undrawn commitments and the repaid amounts, the total return achieved on the commitment for the fund in this example would be only 8.3%. These results are interesting, as IRR and treasury return were the same in the examples; the different total returns under scenarios A, B and C are mainly explained by the timing effect of the overall capital put to work (see Figure 10.4).

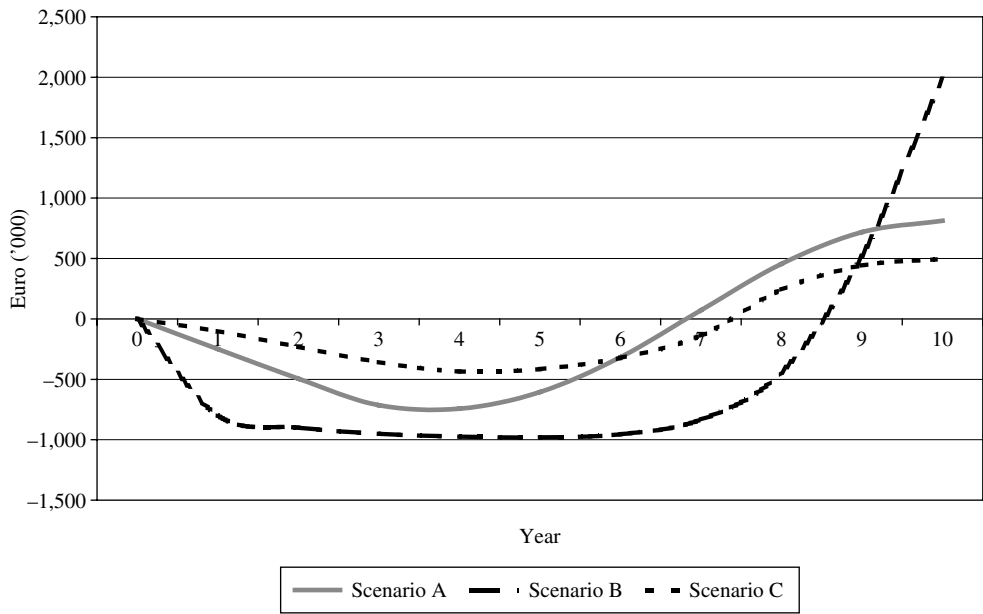
To sum up, for typical treasury returns in the single-digit area, the impact of timing effects on the total return is significant. Higher returns of the undrawn capital could compensate for this<sup>6</sup> (see Figure 10.5).

However, there is an inherent conflict between return and liquidity, and the extreme situation in which the IRR of the private equity funds and the investment return of the undrawn capital become the same is not meaningful to consider (see below).

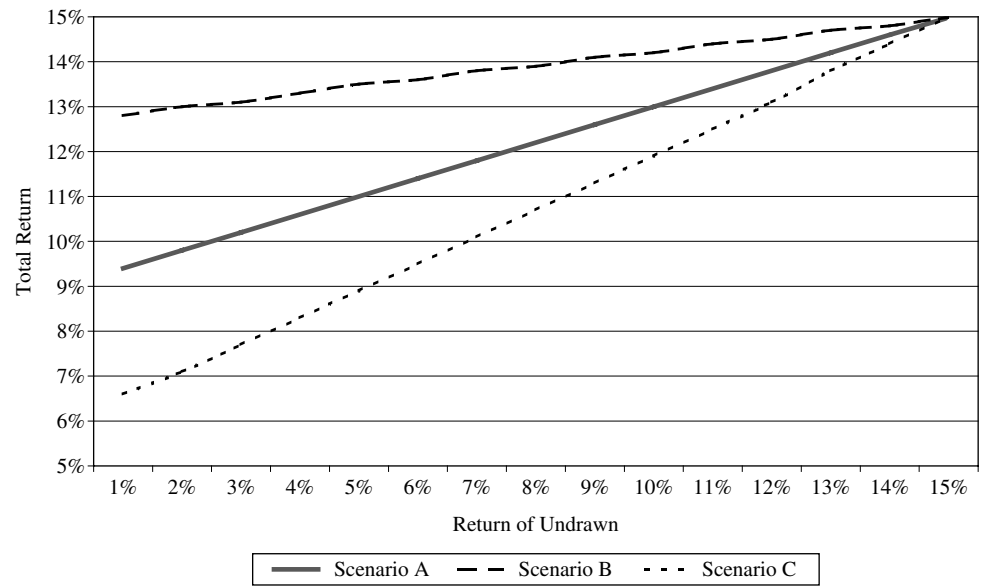
### 10.1.3 Over-commitments

Only 20–40% of a limited partner's commitments are invested per year on average. Therefore, investors have to find ways to minimise the opportunity cost of the “non-productive” investment. Timing and size of cash flows to and from private equity funds are not known until they are announced. But for a diversified private equity fund investment programme

<sup>6</sup> See Kogelman (1999): “To achieve the full benefits of private equity, both committed capital and distributions need to be invested in vehicles that have the potential to earn returns that are close to the targeted private equity returns. This is a general assumption of IRRs as performance measures”.



**Figure 10.4** Cumulative cash flows



**Figure 10.5** Impact—return of undrawn

they follow a predictable pattern. Therefore, limited partners can implement an over-commitment strategy in which more than the available resources are committed in order to achieve a target investment level.

$$\text{Over-commitment ratio} = \frac{\text{Signed commitments}}{\text{Resources available for commitments}}$$

An over-commitment ratio of less than 100% suggests an inefficient use of resources. Over-commitment ratios of 125–150% are documented.<sup>7</sup> An aggressive over-commitment strategy characterises the investment phase of a programme, when capital needs to be quickly put to work. After the build-up of the portfolio, programmes that have a long-term orientation and foresee reinvestments or new commitments are constrained by the portfolio's average return, which sets a cap on the over-commitment ratio.

An over-commitment strategy is not simply setting a maximum allocation of commitments per year, but needs to be underpinned by a detailed understanding of the cash flow profiles of private equity funds.

- The over-commitment ratio can be determined on the basis of empirical data. Assuming that, on average, not more than 90% of the commitments are actually called, an over-commitment level of around 110% would be feasible.<sup>8</sup>
- The time lag between commitment and actual investment can be reflected in the maturity profile of the treasury investments to give some extra basis points of return.
- To achieve a higher over-commitment level, the limited partner's portfolio needs to be diversified over several vintage years. As returns begin to come in, they theoretically supplement resources available to be spent on new capital calls.
- If there is no vintage year diversification, in the extreme all private equity funds achieve their maximum investment level simultaneously (see Figure 10.6).

In a diversified private equity portfolio, cash flow patterns of various fund types can be exploited within a portfolio approach. Buyout and mezzanine funds typically drawdown commitments more quickly (1–2 years) than venture capital funds that tend to stretch drawdowns over 4–5 years.<sup>9</sup> Buyout and mezzanine funds also tend to start distributing more quickly, as they usually have annual income components, such as interest on subordinated debt or dividends on preferred stock. They also invest in established companies with fewer years to exit.

As this example shows, diversification over time is essential for an over-commitment strategy. For investment programmes that only have a short lifetime, this can become problematic.<sup>10</sup>

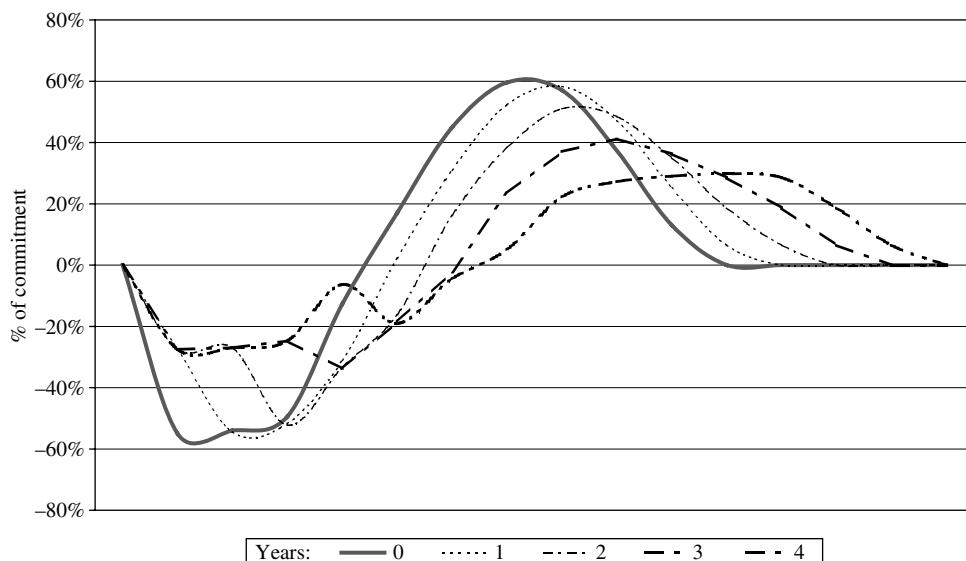
For private equity, and especially in the case of venture capital, the uncertain schedule of contributions, unknown change in the valuation of fund investments and unpredictable

<sup>7</sup> Examples: Schroders Private Equity Fund-of-Funds (listed on Dublin stock exchange), 130% over-commitment ratio; VCH Best-of-VC, 140% over-commitment ratio. Hewitt Investment Group recommended over-commitment ratios of 125–135% (see Schwartzman, 2002).

<sup>8</sup> See Schaechterle (2000): "Analysis of statistical data from Venture Economics funds that invest in private equity have a peak level of 65% leaving the remainder of the investors' committed capital invested in short-term investments. The resulting opportunity costs dilute the overall performance of an investor's private equity allocation by approximately one-third. Swiss Re and Partners Group have developed a proprietary over-commitment model as part of investment strategy".

<sup>9</sup> See Maginn & Dyrá (2000) about the US market.

<sup>10</sup> See Steers (2002): "Institutional investors have discovered that they need to commit as much as 30–40% more than their policy allocation to private equity in order to get capital working. According to the author, in 2001 continental investors had over-committed around 40% of their strategic allocation in an attempt to get more capital actually invested; UK investors had an over-commitment level of 16%".



**Figure 10.6** Time diversification—cumulative cash flows (two private equity funds)

distributions of cash to the limited partner make it very difficult to predict events that would generate liquidity. Cash flows of venture capital funds are certainly hard to model, but they can be modelled and, even for venture capital fund investment programmes, over-commitment strategies are in operation.<sup>11</sup>

#### 10.1.4 Conclusion

To realise the return potential of the private equity fund asset class the undrawn commitments also need to be properly managed. This can be achieved by improving investment returns for the undrawn capital, by investing in funds with an accelerated investment schedule, such as secondaries, and by an over-commitment strategy. It is a challenge to get the right mixture of quickly putting the money to work while achieving a well-balanced portfolio. This requires research, analysis and modelling of historic cash flows and a well-structured and disciplined planning process.

The implementation of a successful over-commitment strategy and investment strategy for the undrawn capital largely depends on the quality and precision of the cash flow projections. Also, the limited partners' overall portfolio composition has an impact on such projections: a highly diversified portfolio of private equity funds, particularly if representing several vintage years, can significantly contribute to the smoothing of net cash flows. Consequently, achieving a high level of resources actually invested in private equity is a very challenging task, as it needs to take all these interdependencies into consideration.

<sup>11</sup> See Real Deals (2004b): "Mowbray Capital aimed to invest EUR 100m and EUR 300 pre-dominantly in early stage venture capital funds while running an over-commitment strategy".

## 10.2 LIQUIDITY MANAGEMENT APPROACHES

Liquidity management addresses the responsibility of a company to have sound practices in place for covering both operational and strategic liquidity considerations.

- Operating liquidity, or treasury management, covers the day-to-day cash requirements under normally expected or likely business conditions. Such treasury management is not specific to private equity investment programmes and will therefore not be discussed here in further detail.
- Strategic liquidity considers liquidity needs on a long-term basis and recognises the possibility of various unexpected and potentially adverse business conditions. It is important because of its potential effect on the ultimate viability of the investment programme.

Liquidity risk is managed by minimising the possibility of forced sales that may arise from exceeding maximum commitment limits or lowering over-commitment levels. There is a trade-off between sufficiently large liquidity buffers to avoid shortfalls and excess liquidity, as return on cash is normally below the programme target return. Liquidity risk mainly relates to the possible inability to satisfy contractual obligations when due.

Penalty charges can be incurred for late payment. Generally, in the case of private equity funds the partnership's documentation provides for certain penalties in the event that a limited partner fails to meet in time a call for a drawdown pursuant to such limited partner's commitment. There is typically a grace period during which interest accrues on the unpaid amounts. In extreme cases, the forfeiture of an investor's interest in the fund can be the consequence of missed payments. The random nature of payments and repayments in private equity leads to comparatively large positions in liquid instruments and also requires borrowing facilities to smooth the peaks and gaps in the cash flows.

### 10.2.1 Sources of liquidity

Commitments are generally met through cash inflows, supplemented by assets readily convertible to cash or through a company's capacity to borrow. To achieve a competitive total return on committed capital the investor needs to manage the investment of uncalled capital during the drawdown period and the reinvestment of distributed capital. The maturity structure of treasury assets and private equity funds should be matched, and there should be well-diversified and stable sources of funding, such as:

- *Follow-on funding.* In the case where the mandator is managing the liquidity, he may be able to step in as a provider of follow-on funding, which is especially meaningful as repayment of liquidity may take time. If the shortfall exceeds the mandator's commitment level, a re-negotiation of the programme may be necessary.
- *Liquidity lines.* As discussed already, a short- and medium-term borrowing facility could be managed either by the mandator or by the programme manager. Cash needs to be available to meet capital calls, but a liquidity line is used if these resources run out. Structuring a sensible liquidity line needs to reflect factors such as the expected amount and timing of cash needs, or the rating of the liquidity provider.
- *Maturing investments.* While it is tempting to maintain capital commitments in short-term instruments, such a policy is likely to adversely impact the total return. To achieve higher returns, the profiles of the private equity fund cash flows need to be predicted and



matched with assets with the same maturity. Because of the uncertain schedule, a maturity structure can only have a limited match.

- *Realisations.* With such a mismatch, the risk of illiquidity increases. Therefore, cash cannot be provided only by maturing assets, but occasionally requires a realisation of positions. To limit the potential for losses resulting from market fluctuations, strict criteria for eligibility of investments in any reserve accounts have to be applied.
- *Sell-off of limited partnership shares.* Private equity funds are illiquid investments and an early redemption is usually not allowed. Limited partners are generally prohibited from transferring, assigning, pledging or otherwise disposing of their limited partnership interests or withdrawing from the partnership without the prior consent of the general partners, who can grant or withhold consent in their sole discretion. However, there is a growing secondary market where seasoned fund investments may be liquidated. But a realisation of limited partnership shares to get liquidity is problematic. It takes considerable time to identify buyers and negotiate the transaction. If there is time pressure, a heavy loss is nearly certain (see Chapter 20).
- *Distributions from private equity funds.* A reinvestment plan should be established that takes into account the uncertainty inherent in the timing and magnitude of distributions of capital. As investments in private equity funds are speculative and require a long-term commitment, there is no certainty regarding timing and amounts of distributions. It is also possible that part or all of the return is received as “distribution-in-kind” in the form of marketable restricted securities. Consequently, planning with reinvestments brings exposure to considerable liquidity risks.
- *Limited partner default.* If several capital calls cannot be met simultaneously, the last resort is the investor’s “default”.<sup>12</sup> However, there are stiff penalties associated with not meeting a drawdown request, such as the termination of the limited partner’s right to participate in the fund’s future investments, the loss of entitlement to distributions or income but not its liability for losses or partnership expenses, the mandatory transfer or sale of its partnership interests, the continuing liability for interest in respect of the defaulted amount, the partial or total forfeiture of the partnership interest, or the liability for any other rights and (legal) remedies the fund managers may have against the defaulting investor.

### 10.2.2 Foreign exchange risk

An additional complication is foreign exchange rate management, which can apply to all levels of the liquidity management process. For private equity funds, the foreign exchange risk stems from the following:

- For contributions to the fund, a higher amount than expected may be necessary if the required cash needs to be converted into a currency with higher value.
- Likewise, distributions could be reduced due to a change of the exchange rate in the other direction.

<sup>12</sup> This has also a “spill-over” effect on the other investors in the private equity fund, as they have to step in for the defaulting partner. Therefore, an important part of due diligence is the assessment of the other limited partners’ financial strength and commitment to this asset class.

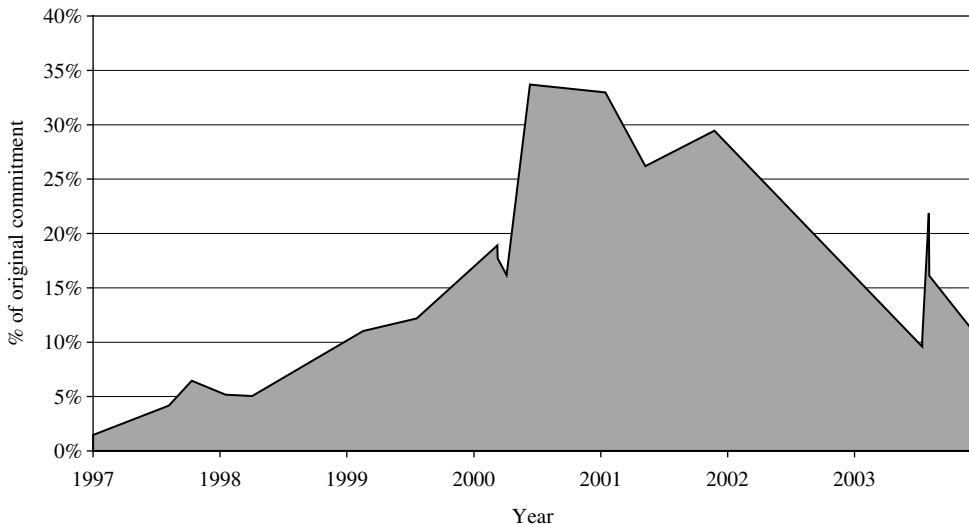
- Of course, generally unrealised gains or losses have an impact on any asset held in foreign currency. For an illiquid and long-term-oriented asset class this should not matter in practice.

How relevant is foreign exchange risk for private equity funds? Probitas Partners (2003) give a USD denominated fund managed by Hicks Muse as an example. This fund invested in Yell, a publisher of telephone directories now listed on the London Stock Exchange. Yell was purchased when the dollar was valued higher than the GBP. In 2003 the deal was advantageous for investors receiving distributions in GBP converted into USD. Aggregating realised and unrealised value, at that time the EUR investors had a two-fold return on their stake in Yell, while the USD investors had a 2.6 fold return on the same investment. Needless to say, examples where exchange rate fluctuations had a comparable negative impact on investments can also be given.

One could assume that the foreign exchange risk can be neglected when compared to the specific risk of the private equity business (particularly in the area of venture capital) and that fluctuations between major currencies like USD, GBP or EUR tend to cancel each other out in the long run, as these currencies normally trade within a band. A real-life example of a USD denominated private equity fund from the perspective of a EUR investor, however, suggests caution. Figure 10.7 gives the impact of the exchange rate fluctuations as percentages of the committed amount within the time period mid-1997–mid-2004.

The exchange rate impact is assessed as follows:

1. We assume that the undrawn capital is invested risk-free in EUR denominated securities (3-month EURIBOR) and that for each capital call the required amount is converted at the specific date.
2. We compare this against the situation where the commitments are converted into USD on day one, and undrawn capital and repayments are invested risk-free in US Treasury Bills (3 months). All repayments are kept in USD.



**Figure 10.7** Impact of FX rate fluctuations (USD/EUR)

In mid-2004 an investor that stayed in EUR and did the USD conversion just in time would have lost 11% of the commitments compared to an investor who also kept the undrawn capital continuously in USD. However, had the investor converted the USD distributions into EUR on the date of the repayment, the loss would have increased to 18%.

Generally, approaches to dealing with foreign exchange issues are either to avoid, to diversify or to hedge:

- Investors in private equity typically try to avoid exposure to currency risk but, especially for globally operating programmes, this is not always possible.
- Diversification can be over time and over currency baskets and builds on the assumption that foreign exchange fluctuations are not correlated with the timing and amount of cash flows. For a diversified fund portfolio, the inflows and outflows should achieve a sufficient degree of protection against foreign exchange risk. As explained in detail by Weidig & Mathonet (2004), diversification over various private equity funds can reduce the investment risk significantly. But in an international private equity fund portfolio currency exposures cannot be diversified away to the same degree. Therefore, the relative importance of foreign exchange risk could even increase in line with the diversification level.
- Financial instruments for the control of foreign exchange risks are too expensive when applied over the lifetime of a private equity fund.<sup>13</sup> The uncertainty of the date and amounts of cash flows seems to be too high to perform an efficient hedging. These characteristics imply that the potential hedging would be highly ineffective. Of course, hedging has still its place in the context of the usual treasury management, where cash flows can be forecasted with a reasonable level of confidence.

#### **Box 10.1: Emerging markets currency issues**

So far our discussion has only covered the major currencies in the European and the US private equity market. Usually investors would not find it necessary to make currency decisions on top of private equity investment decisions, since they can gain exposure to currencies using other financial instruments or approaches.<sup>a</sup> Therefore, commitment currency should match the investment currency as closely as possible. At least within the established markets, in the case of venture capital it is commonly assumed that currency fluctuations are immaterial compared to the overall investment risk taken. As a result, limited partnership agreements usually do not address foreign exchange issues.

There are some caveats in the special situation of private equity in emerging markets. Here investors are not only exposed to significant currency risks, but also fund managers usually target primarily foreign limited partners, as there are fewer domestic investors that have sufficient assets to invest in such illiquid partnerships.

<sup>a</sup> Exchange rate fluctuations do not necessarily offset each other. For private equity funds, cash flows follow a specific pattern—investment period with predominantly inflows and divestment period with higher outflows. Here a long-term trend in exchange rate changes can have a significant positive or negative impact. If one has a strong view on long-term currency developments, a fund investment can be one way of playing this, if there are otherwise no currency derivatives suitable for long time horizons.

<sup>13</sup> See Probitas Partners (2003): “Jonathan Roth, a managing director at Abbott Capital, a New York fund-of-funds manager, says his firm never uses currency hedges. ‘The cost to hedge is just too prohibitive’, he says”.

Some examples may help us draft a few recommendations. Assume, in an emerging market, that limited partners have commitments in a USD denominated fund and the local currency experienced a decline of 25% of the last three quarters against the USD. Drawdowns and reporting are in USD. For a given portfolio company, one could argue that it is still performing in its market as expected and therefore the investment's value did not change. From the viewpoint of the foreign investor, maintaining the valuation at cost is implicitly a write-up of the portfolio company's value. Conversely, volatility in valuations is affected by exchange rates fluctuations more than in European or US-based private equity funds, although book value is maintained in line with conservative valuation guidelines at the same level. For this reason, in a multi-currency portfolio the underlying currencies need to be monitored. Even if investors may feel that they have not made a currency decision by investing in their home currency (predominantly USD or EUR), the valuations and returns from the portfolio companies are more likely to have higher volatility attributable to currency fluctuations.

In situations where partnerships are specifically set up for foreign investors, it is debatable whether these limited partners should take the full currency risk. Here covenants to mitigate foreign exchange issues and align interests between investors and fund managers could be built into the limited partnership agreements. For example:

- In situations where relatively large positions are held by the fund and a comparatively short holding period is expected, hedging on a deal-by-deal basis can be cost-efficient and effective. For this purpose, a certain budget for hedging or a buffer to compensate for exchange rate fluctuations should be put aside.
- If the investors have the view that the emerging market's currency is overvalued, the commitments should be in this currency, and payments, if feasible, should be delayed as long as possible. Likewise, if it is believed that the currency is undervalued *vis-à-vis*, say, the USD, commitments should be made in USD and payments done as quickly as possible.
- Quite common in emerging market situations are companies that do the bulk of their sales in USD or EUR. Limited partners should make sure that fund managers either do not invest in a company that has a currency mismatch between income and expenditure above a certain threshold, engage in trades other than for hedging purposes, or follow up on this matter during their monitoring activities.
- Managers with multi-currency exposure should be held accountable for the screening of deals, and currency diversification limits should be incorporated in the limited partnership agreements.

General partners need to receive incentives to take exchange rates into consideration when timing exits. If carried interest is calculated based on the investor's currency only, it poses an agency problem, as it keeps the principal fully exposed to the currency risk, while the manager can only benefit from it. For example, in addition to the hurdle and carry calculation in the fund's currency, investors could ask for a carried interest calculation on the underlying investments' currencies, to strip off the effect of exchange rates: no carry would be paid on the "profits" attributable to currency appreciation, since this would not be due to the manager's skill. Incorporating a schedule for foreign exchange movements into the carried interest calculation and other covenants could mitigate this.

The implication of these points is that private equity is no different from other asset classes in the materiality of the currency risk when investing in emerging markets. Therefore, the currency decision needs to be explicitly incorporated in the investment decision process, and liquidity management of private equity in this context may require special amendments to limited partnership agreements.

Commitments should match the liabilities of the programme and if possible managers should minimise the exposure to foreign exchange risk. Investments in private equity funds denoted in other currencies should rather be the exception. While international investors with significant liabilities in the respective currencies can build up globally spread private equity portfolios, under ordinary circumstances measures should be taken to minimise exposure to foreign exchange risk.

### 10.2.3 Distributions-in-kind

“Distributions-in-kind” is a widely accepted distribution mechanism in the US venture capital market, where general partners distribute returns to their limited partners in the form of listed securities as opposed to cash. This happens usually when a fund’s portfolio company achieves an initial public offering (IPO) or when trade sales are completed as share-based transactions. Distributions-in-kind are of higher importance during periods of high IPO activity, and so far very few general partners in Europe have made use of this mechanism.

General partners are subject to lock-up agreements: over an average number of 180 days insiders<sup>14</sup> cannot dispose of their stock, or sell any securities convertible into or exchangeable for shares of the company’s common stock. After expiration of the lock-up period—which is public information—venture capitalists are free to sell or distribute shares, but are subject to certain restrictions. While the general partners are controlling a substantial position in a public company’s stock and will be restricted in the ability to sell this position, for the limited partners there are fewer restrictions.<sup>15</sup> Funds are often contractually prohibited from distributing stock and—especially in venture capital—limited partners typically have a preference for cash, but the nature of venture investing and the historical predominance in the US of IPOs as an exit strategy were conducive to stock distributions.

In a buoyant IPO market, it is likely that distributed shares would increase in value, and thus generate more return for the limited partners. Positions held by investors in venture capital funds typically consist of unrestricted shares and tend to comprise a relatively small portion of the portfolio company’s total shares outstanding, providing for relatively easy liquidation. Consequently, monetising positions post-IPO is typically not overly difficult or costly. However, there are notable differences between distributions-in-kind for venture capital and for buyouts, as buyout portfolio companies that have gone public in recent years have tended to be larger and of higher quality than many of the venture-backed companies. For this reason buyout distributions-in-kind typically involve greater amounts of capital,

<sup>14</sup> Limited partners should build into partnership terms and conditions that help to avoid insider problems, e.g. that the general partner will not make distributions when in possession of material non-public information.

<sup>15</sup> In the US such sales are governed by Rule 144(a) (see Edgar, Sweeney & Taylor, 2001); they are restricted in any given 3 month period to no more than the greater of 1% of the total shares outstanding (within a given class) or the average weekly trading volume over the 4 weeks prior to sale. Alternatively, the general partner can choose to exit the position through a secondary offering, with a substantial negative impact on the stock price.

resulting in significant liquidation issues for the limited partners. Larger investments are more difficult to liquidate<sup>16</sup> and the longer investment cycle of a buyout transaction makes the tax advantages of distributions-in-kind less meaningful.

For the limited partners distributions-in-kind can be advantageous, as they can accelerate the time to liquidity and potentially less share price deterioration than with secondary offerings through the general partner. As long as they own less than 5% of a company's outstanding shares, limited partners who have received distributed stock will not face the restrictions of the general partners. Although not relevant under normal conditions, there may also be substantial capital gains tax obligation for limited partners who accept cash distributions when holding periods for investments are very short (as in US venture capital at the end of the 1990s).

The main disadvantages are selling pressure and value erosion. One could argue that the general partner seeks to distribute stock when it reaches, according to their insider knowledge, a peak valuation.<sup>17</sup> Consequently, limited partners aim to sell off the position as quickly as possible, leading to downside price pressure post-distribution. The amount of cash that limited partners—especially when a taxable entity—eventually receive often differs materially from the value of stock distributed.

Managing distributed shares of small-cap companies trading in a still thin market can be a challenge for the limited partner, as the limited partner can only make sell and hold decisions. Moreover, the act of distribution with a flood of shares onto the market has an adverse impact on the stock price. Liquidating stocks immediately after distribution has often resulted in a negative return.

Alternatively, in the USA limited partners frequently used techniques for hedging undistributed securities. The main complications associated with this are the lack of stock lending services for these shares that makes the cost of hedging very high, and the fact that this may even create risks. If as part of a hedging strategy a call option is sold, the limited partner is left “naked short” when called without being able to deliver the shares.<sup>18</sup>

The limited partners should build some defence into partnership terms and conditions, and especially need to address both the process and valuation methodology in sufficient detail. The IRR and subsequent carried interest calculation should be based on the market prices after the volume of stock has been distributed. In the USA the general partner's returns are typically based upon a 15–20 day average stock price (10 days pre-distribution and 5–10 days post-distribution). Also expenses related to the process (such as commission costs) should be covered by the general partner, and the management fees should be reduced accordingly.

The limited partnership agreement may also foresee that no more than 10 days' trading volume (as defined by the average trading volume during the pre-distribution period) can be distributed in a single event. According to Evans & Marks (2002), best practice for the general partner would be to subdivide a large ownership position into eight to ten portions and then supply the market with these in a staggered and somewhat predictable fashion over a protracted period.

<sup>16</sup> Especially for the largest limited partner, this may be an issue. Moreover, if the shares distributed to a limited partner exceed 5% of the stock outstanding they will be deemed a beneficial owner and will be subject to the same sales restrictions as the general partner (see Wiesner *et al.*, 2002).

<sup>17</sup> On the other hand, there should be an alignment of interests. General partners are also invested in their own funds and may suffer the most from a post-distribution price erosion. Usually general partners should be unlikely to execute a distribution-in-kind unless they believe that it will maximise value for all.

<sup>18</sup> See Evans & Marks (2002).

**Table 10.1** Adjustments for performance measurement

	Required adjustments
Gross return (i.e. before fees)	None
Net return (i.e. before distribution waterfall)	One-off fees (set-up, structuring) Management fees
Net return to limited partner (i.e. after distribution waterfall)	Carried interest to general partner
Final net return to limited partner	Exchange rate gains/losses (for commitment in foreign currency) Investment gains/losses (for distribution-in-kind)

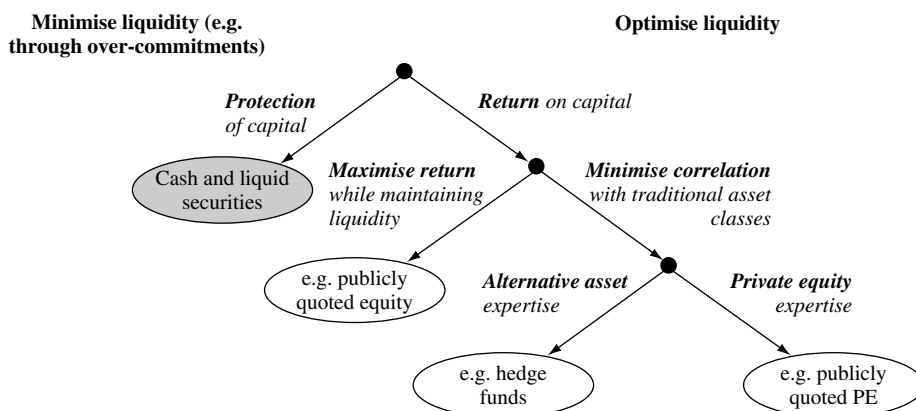
### 10.2.4 Consequences for performance measurement

In order to measure the performance of their investments in private equity funds, limited partners have to calculate the return from the time of drawdown to the time of final liquidation.

## 10.3 INVESTMENT STRATEGIES FOR UNDRAWN CAPITAL

Programme managers should not be given resources that are not needed for investing in private equity funds. In a case in which large liquidity buffers nevertheless need to be kept, the programme return target should require that the undrawn capital be managed to growth objectives to optimise liquidity. We have identified the following main strategies for managing the undrawn capital (see Figure 10.8):

As discussed above, to minimise the amount of “idle” capital in the hands of the fund, drawdowns should ideally be just-in-time or possibly also subscription-based, and an over-commitment strategy should be followed. In situations where large positions of undrawn capital cannot be avoided, the return could, for example, be increased by maximising exposure to

**Figure 10.8** Main strategies for managing undrawn capital

long-term bonds—which requires predictability, planning—or by maximising exposure to other higher yielding asset classes. For this purpose, Kogelman (1999) suggested public equity.

As non-private equity assets are not the core expertise of a private equity funds programme manager, this suggests that this management should be rather left to the mandator if a flexible follow-on financing can be arranged. In any case the premium between liquid assets and illiquid private equity funds sets limits to returns on the undrawn capital. Alternatively, capital can be put to work more efficiently by investing in other assets that also fall into its core expertise, such as publicly quoted private equity or other liquid alternative assets.

### 10.3.1 Publicly quoted private equity

Listed private equity funds-of-funds<sup>19</sup> offer some liquidity and a quick build-up of a diversified portfolio of private equity funds. They were set-up specifically to attract investors who want to get access to the private equity asset class without going through the set-up of a dedicated programme, while maintaining liquidity. Listed funds-of-funds are often traded with a significant discount to the NAV. Therefore such vehicles could be a meaningful way of entering the asset class, as they increase flexibility in tactical asset allocations, and to gain fast exposure to private equity fund investments.<sup>20</sup>

They can have a role in institutions' portfolios, but generally share many of the characteristics of "ordinary" public equity,<sup>21</sup> while keeping some of the unquoted private equity. According to various industry experts, the area of listed private equity fund vehicles is still largely under-researched.<sup>22</sup> Consequently, knowledgeable investment managers can create value out of such instruments, and therefore it can be a meaningful strategy to have a programme (as a specialist for this market) manage a portfolio of private equity funds plus publicly traded private equity funds.

Another example is shaPE Capital, which proposes investments in publicly traded private equity to maximise exposure to the private equity asset class while maintaining some liquidity.<sup>23</sup> A study undertaken by Zimmermann *et al.* (2004) showed a long-term performance advantage for listed private equity companies compared with standard shares, but for the purpose of providing instant liquidity the investment universe is too narrow. The authors identified a total of 287 publicly traded private equity vehicles<sup>24</sup> successively listed over the period 1986–2003.<sup>25</sup>

<sup>19</sup> For example, Swiss listed funds-of-funds, such as Absolute, AIG, Castle Private Equity, Private Equity Holding, ShaPE.

<sup>20</sup> See Bushrod (2004a): "According to Swedish pension fund AP7's Daniel Barr, an innovative approach to the problem of achieving diversity and optimum allocation, including drawdowns immediately, is: 'Since we are quite a newly established fund, the yearly inflow into the fund is quite large compared to the assets under management, so we could commit 4% of the inflow from the start and reach vintage year diversification by committing from future inflows. We also set up a parallel programme of listed private equity funds. We have a portfolio of eight different funds listed in London and Zurich, both as long-term investment to add up to 4% but also to work as holding place until our unlisted commitments are drawn down. These vehicles fall outside the regulatory restriction. [Only 10% can be committed to private equity.] This would also give us some ability to rebalance through the public markets if needed. We will in normal instances not be forced to liquidate this portfolio, since we grow rapidly over time even if the holdings are reducing as a percentage of the portfolio over time'".

<sup>21</sup> Listed funds-of-funds need to deal with the inefficiencies caused by holding quantities of cash without having the mechanisms to distribute cash to investors efficiently, as a limited partnership structure can. For this purpose, Pantheon's listed fund-of-funds vehicle PIP introduced participating loan notes, which investors can convert into redeemable shares. These notes are initially not paid in, and allow PIP to make capital calls from the investors when necessary, so that not such a large amount of cash needs to be held.

<sup>22</sup> See Meek (2004a).

<sup>23</sup> See [www.shape-capital.com](http://www.shape-capital.com): "a limited amount of assets is invested in listed private equity companies, thus maximizing the investment ratio while at the same time securing medium-term liquidity".

<sup>24</sup> Imposing minimum liquidity constraints suggests 114 liquid stocks.

<sup>25</sup> There is some bias towards Europe (163) because of the high number of UK companies (113).



UK venture capital trusts<sup>26</sup> are quoted on the London Stock Exchange and can be traded. However, at the moment it is less the liquidity and performance of these trusts that attract investors, but the upfront tax breaks. The initial income tax relief is only available on the new issue of shares, which must be kept for 3 years to retain the relief. Therefore, there is no real liquidity for such investments yet. There will be more demand for new shares and not so much for second-hand shares. As a solution to the lack of liquidity, some venture capital trusts provide a share buy-back—typically with a discount to the NAV.

A major practical restriction of publicly traded private equity—be it venture capital trusts or funds-of-funds—is their thin market, resulting in high bid–ask spreads. Again, there is often a discount for most such structures, the market price reflecting the relative illiquidity of the market. This can of course go in both directions. If one wants to buy a large position, it may take several months and pushes the price up; likewise, if one has a larger position, it may take several months to sell it. The significant discount on the NAV is comparable to that observed for secondary transactions of unlisted funds. Moreover, while publicly traded private equity funds-of-funds present their internationally diversified portfolio as advantageous, the shareholders are as discussed above, highly exposed to the associated foreign exchange risk.

### 10.3.2 Other alternative assets

Borello & Bader (2004) suggest that equity hedge funds are an attractive alternative for uninvested private equity capital:

- It is assumed that hedge funds are similar to private equity in their correlation characteristics with bonds and equity.
- There is an asymmetric performance pattern, with maximum upside participation but only limited downside participation.
- The relatively good liquidity of most equity hedge funds allows investors to regularly feed the private equity portfolio when the capital is required for investments.

The authors find that investing uninvested private equity commitments in equity hedge funds generates a combined exposure, with risk-adjusted returns better than private equity or public equity alone. Participation rates during bear market conditions are low, while maintaining a large part of the upside potential during bull markets.

Alternative investments indexed to hedge fund performance are becoming an accepted tool for treasury management. Pension funds like CalPERS in the US or ABP in The Netherlands allocate up to 10% of their assets to hedge funds or hedge funds-of-funds. Instead of entering into a direct agreement, investors can also acquire index products linked to the return of a selected hedge fund-of-funds.

Nevertheless, there is still significant liquidity risk, as generally 1–2 months is required to exit a position. These instruments have a limited liquidity. There is no developed secondary market yet, and in practice mainly an early termination by the issuer or the arranger may be feasible—with no guaranteed minimum price. Apart from typical investment risks, reporting and valuation of such products rely on price quotations provided by the issuers, with all problems associated with valuations of alternative investments.

---

<sup>26</sup> See Sormani (2004b).

## 10.4 CASH FLOW PROJECTIONS

Investments in illiquid assets present particular challenges for portfolio management, as there is a high degree of uncertainty inherent in the timing and amount of cash flows. The main objective of a strategic commitment steering is to build up and maintain a balanced and stable portfolio in line with the investment strategy. The portfolio balance depends not only on the level of commitments to funds investments but also on the rate and timing of drawdowns and distributions. Effective management of a private equity programme requires reasonably accurate assessment of the individual fund's future cash flow pattern to enable the steering of commitments and portfolio balance.

As we saw in the discussion above, maximising the return on undrawn commitments will often require taking positions in assets with limited liquidity. A profitable realisation of such positions may take 2–3 months. This process needs to be started as early as possible. Therefore, the establishment of efficient liquidity management relies heavily on projection and planning methodologies. Projection models have to be simple and sensible on a theoretical basis. They should be able to incorporate and respond to actual cash flow experience and valuations. Such models should be also able to analyse the portfolio impact of varying return scenarios and changing rates of investments and repayments. Projections need to consider existing deals with known characteristics and future deals with unknown characteristics or characteristics (such as commitment levels) to be chosen (see Table 10.2).

Especially in the case of a private equity programme, this is a complex exercise that requires an integrated approach. Generally, a high degree of communication, experience and different tools are critical. The management of liquidity risk requires a comprehensive regular analysis of projected cash flows. Blind reliance on quantitative models is as much a recipe for disaster as the all-too-common “gut feel” approach. Sophisticated alternative investment and fund-of-funds managers have developed proprietary approaches<sup>27</sup> that take a series of inputs into consideration:

- Market data and empirical data (mainly from data services, such as Venture Economics, but also internal data) form the statistical input for forecasting expected drawdowns and distributions. They are complemented by an assessment of the vintage year quality and the investment and exit environment (empirical data on expected drawdowns and repayments).
- As purely quantitative approaches have their limits, significant judgement is required for estimations and valuations. The main problem is the quality of data in an opaque market. It is only with a high level of expertise that the interpretation of empirical and observed data is possible.
- Data on actual drawdowns and distributions form the basis for the valuation of individual private equity fund investments (monitoring input on actual drawdowns and distributions). Also, monitoring of the portfolio quality is of relevance: although write-offs are not immediately relevant for cash flows, they can reduce further financing needs.
- Projections are generated with the help of various models. Generally, the accuracy of predictions is higher for mature funds than during the first years of a new fund. Also, estimating exits in the early stage segment is extremely difficult.

<sup>27</sup> The Partners Group's model (see Wietlisbach, 2002) differentiates between strategic and tactical commitment steering. Its private equity management approach rests on the four pillars, “empirical data”, “actual data”, “investment advisory” and “quantitative management”.

**Table 10.2** Components of cash flows

	Known/can be planned	Predictable	Difficult to predict/uncertain
Unidentified private equity funds in future to be added to portfolio	Commitment level (plan)	Time window for signature (estimate)	Characteristics, terms and conditions (scenario)
Identified private equity funds to be added to portfolio in near future	Commitment level (plan)	Start of private equity fund operation (estimate) Timing and size capital calls (estimate, forecast) Liquidity events (estimate) Management fees (estimate) Set-up costs (estimate) Equalisation premium (estimate) Timing and size of capital calls (estimate, forecast) Timing and size of capital repayments (short-term) (estimate) Liquidity events (estimate)	Timing and size of capital repayments (forecast, scenario) Maturity of private equity fund (forecast, scenario)
Private equity funds already in portfolio	Commitment level (limited partner (LP) agreement) Lifetime of fund (LP agreement) Management fees (LP agreement) Set-up costs (LP agreement) Equalisation premium (LP agreement) Liquidity events (disclosed)		Timing and size of capital repayments (forecast, scenario) Maturity of private equity fund (forecast, scenario)

Very simplistically, one can differentiate three approaches to carrying out projections:

- *Estimates* utilise an assessment of current conditions to identify possible future events. The priority is accuracy, which requires a relatively short time horizon.
- *Forecasts* go beyond the short-term horizon, primarily relying on trends-based analysis. Often expert opinion is required for making an assessment concerning the continuity or modification of current trends.
- *Scenarios* can be thought of as a range of forecasts, but both their construction and intent are more complex. They aim to describe different environments based on plausible changes in current trends.

There is a significant difference between scenarios and forecasting. Presumably, forecasts are attempts at a supposedly predictive picture of the future, while scenarios aim to enable better decisions about the future. Of course, the distinction is not as clearly cut as depicted in Table 10.3, and typically projection tools combine elements of all of these approaches.

#### 10.4.1 Estimates

To estimate is to form an opinion based on imperfect data, comparisons or experience. Because statistics are of lesser value over the short-term, in this situation estimation techniques can be more meaningful than forecasts. Estimates can be applied to new commitments in private equity funds to be signed within the next few months, and to liquidity events in the near future within private equity funds already committed, as follows:

- New commitments in private equity funds and their first drawdowns can—with reasonable accuracy for a period of 3–6 months ahead—be derived from deal pipeline analysis. Investment managers typically are in discussions with other potential investors. They have a good understanding of the current fund-raising environment and the resulting likelihood of commitments to materialise and the size of these commitments.
- Of course, there is a series of liquidity events that are either known or are reasonably likely to happen. Occasionally even exits (e.g. in the form of IPOs) are publicly announced and possible price ranges are discussed.

A regularly updated calendar of such events forms the starting point for estimating short- and medium-term liquidity needs.

**Table 10.3** Approaches to projecting cash flows

Tactical		Strategic
Estimates	Forecasts	Scenarios
Short-term (typically 3–6 months)	Medium-term (typically 1–2 years)	Long-term (typically beyond 2 years)
Based on current market situation	Based on specific market environment	Based on uncertain environment
Predominantly data gathering and analysis	Predominantly quantitative modelling	Predominantly planning

## 10.4.1.1 Example for estimation techniques

Distributions from the private equity funds to their investors are obviously more sensitive to short-term information and changes. Estimates can be significantly improved through closer interaction with general partners and through incorporating judgement.

Baring Private Equity Partners (BPEP) has pioneered a cash flow model with the objective of generating the most accurate projections possible of net capital flows from BPEP directly managed funds to investors. In order to measure the uncertainty of exit values and dates, the model has incorporated a probabilistic methodology. BPEP investment managers are routinely asked to provide an early, expected and late exit date, and a low, median and high exit value, as well as the attached probabilities for each event and the basis for these estimates. Such an estimate will take the following form (see Figure 10.9), with:

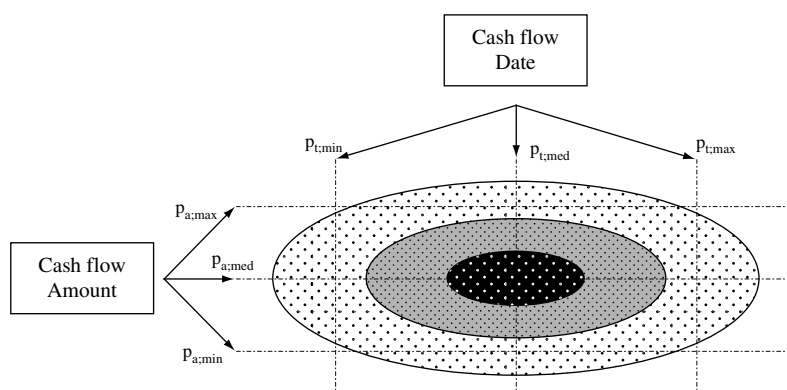
$$p_{a;\min} + p_{a;\text{med}} + p_{a;\max} = 1$$

and

$$p_{t;\min} + p_{t;\text{med}} + p_{t;\max} \leq 1$$

That these probabilities for cash flow dates do not necessarily add up to 1 caters for the situation where the cash flow is not certain to take place at all. BPEP applies this estimation exercise consistently and rigorously on a regular basis where valuations are arrived at in compliance with EVCA guidelines. This approach calls for the following comments:

- The accuracy of the model's projections depends on the estimates for price and date of portfolio exits, and therefore is subject to the uncertainties of market conditions and buyer sentiment. Nevertheless, the exercise, if systematically performed quarterly, will lead to an improved accuracy and provide self-learning.
- Exit values and dates are uncertain and continuous variables. Since they are based on established valuation methods, estimates of exit values forecasts are more likely to be accurate than those of exit dates.<sup>28</sup>



**Figure 10.9** Estimation “grid” according to BPEP

<sup>28</sup> Increasing standardisation of valuation approaches in private equity (see the new EVCA, BVCA, and AFIC valuation guidelines) will further improve the comparability between various private equity funds.

- Exit dates can be estimated only over a short time frame. Typically, after more than 6 months estimates cease to be of relevance and forecasting techniques become more important.

This approach is successfully applied by BPEP for its portfolios of directly managed investments. In this situation BPEP as general partner has of course privileged access to information.

*Our estimates have proven accurate enough over 12 month periods (which would make them forecasts) and we work around two basic sets of assumptions (which would make them two scenarios).*

Juan Delgado-Moreira, BPEP

A limited partner, however, needs to overcome significant barriers to access timely information of sufficient quality that allows a bottom-up analysis and precise projections. For a limited partner, a bottom-up analysis—due to the lack of detailed information—is usually only possible with limitations, and estimates will certainly often lack precision.

Generally, the fund managers will feel reluctant to disclose information on likely financing or exit events before the deals actually close, e.g. in order to protect their negotiation position. Consequently, this is not made part of the regular standard reporting, and only in rare cases, such as an IPO, are investors informed timely enough. However, there are a variety of analytical techniques (like the ones used for the valuation of secondary transactions) to form “educated guesses”. For the limited partner it is either a good questioning technique or an educated guess that leads to the estimates. The basis for such an estimate could be discussions with the fund’s management on possible new investments or planned realisations, or an assessment of the maturity of the fund and the current exit conditions (see examples in Appendix 10A).

The combination of three exit values and three dates gives nine possible outcomes per portfolio company. Just combining 10 companies would give  $9^{10} = 3.5$  billion different outcomes. A relatively simple Monte Carlo simulation helps to determine the range for possible outcomes. With a sensitivity analysis (taking into account longer or shorter time periods or lower or higher realisation levels) the robustness of results can be checked.

- The estimates can be interpreted as inputs for a discrete distribution. Volatility (the standard deviation of the returns), and therefore a judgement on risk, is implied by the inputs.
- Another approach would be to take the investment managers’ inputs as a continuous distribution. Their average estimate is taken and a Normal distribution is assumed, as to both value and timing, with a set standard deviation<sup>29</sup> for the exit value and for the exit timing.
- A third alternative used by BPEP is a non-Normal probability distribution created *ad hoc*, following the shape of the curves defined by the three exit values/times and the associated probabilities. Here each deal can have a different curve.

If applied consistently, this tool—despite its simplicity—can be highly useful in assessing likely cash flow patterns over a short time frame. A structured analytical process and interview technique, possibly with a scoring to link categories to probabilities, can further improve the quality and consistency of estimates and would allow calibration of the model.

<sup>29</sup> A Normal distribution is defined by the mean and the standard deviation.

When aggregating the estimates into projections, the private equity fund's structure is also relevant. For example, the preferred return (also called the "hurdle rate") can heavily distort the cash flow to the limited partner. With 100% catch-up, the limited partners are effectively out of the money until the general partner has made a full recovery.

#### 10.4.1.2 Implementation issues

For short-term estimates in a bottom-up approach, the private equity funds and their portfolio companies are analysed in detail. It is obvious that a thorough bottom-up analysis is a resource-intensive exercise and therefore, especially for large portfolios, all companies cannot be continuously reviewed. Also, different general partners will provide information with varying levels of detail and reliability or even will not respond to requests at all. However, in most cases it is possible to split the portfolio into parts with higher and lower probabilities of cash flows and focus one's attention on the parts of the portfolio with higher "activity levels" (e.g. mature companies in booming market segments are more likely to exit than recently funded and young companies). Even in more active market situations, many funds can be eliminated from such an exercise right away, such as:

- Some funds are too early in their life and no positive cash flows can be expected.
- Some funds in later stages have investee companies that are too young to be likely candidates for exits.
- Some market segments may be comparatively "flat".

In a real-life situation we would have to combine such bottom-up analysis with a macro view that takes into account, for example, the different private equity funds' geographical orientation, age, industry and stage focus as a starting point. This narrows the population down to a meaningful list of funds that are to be analysed bottom-up to determine the expected cash flows. For the relatively "idle" part of the portfolio, simplistic techniques like "next quarter's forecast is equal to last quarter's realised cash flow", in combination with medium-term forecasts, can be applied. Even if estimation techniques occasionally lack precision, they are always an indispensable tool for anticipating liquidity shortfalls and as an early warning system to supervise limits. For an illiquid asset class such as private equity, it is critical to continuously monitor the development and to initiate changes as early as possible.

### 10.4.2 Forecasting

All forecasts are based on the assumption that the past can be extended into the future and build on statistical extrapolation of variables. Such approaches are mainly quantitative and aim to predict over the medium term. For private equity funds, a forecasting approach needs to factor in, among other factors criteria such as the fund's life cycle characteristics, its age, empirical data for comparable funds, or market data such as stock market indices.

#### 10.4.2.1 Cash flow libraries

A private equity fund's life cycle characteristics are typically modelled through cash flow libraries based on historical fund data (see Appendix 10B for EU and US venture capital

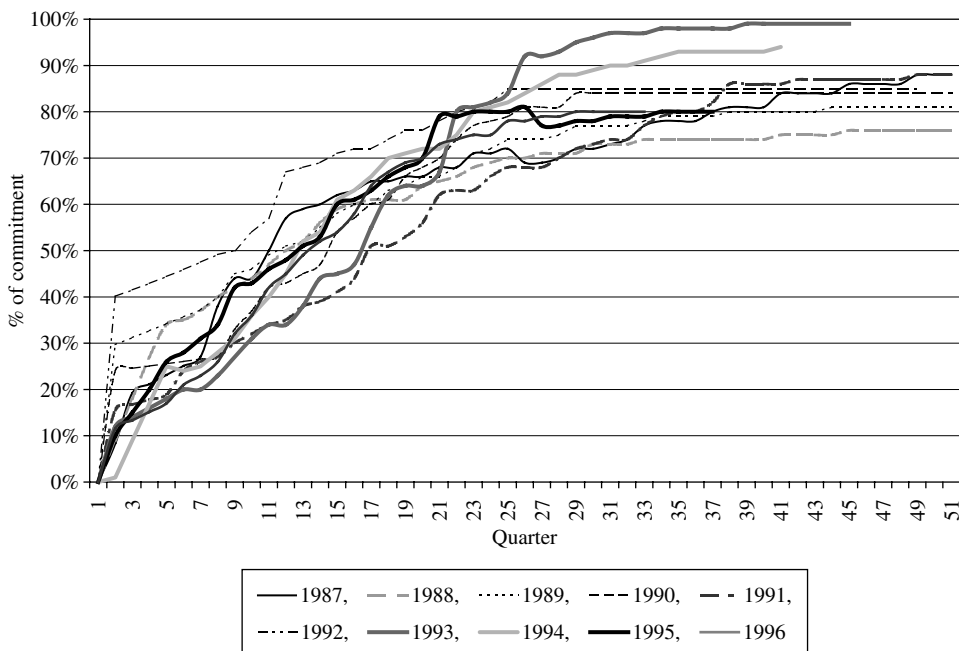
funds' cumulative net cash flows). This could be data from own investments or is also provided by data services such as Venture Economics. The underlying assumption is that the pattern (timing, amount of cash flows) is the same regardless of what fund or quality of fund, and a scaling, e.g. as described in Weidig (2002b), can be applied.

This approach is meaningful mainly for drawdowns, as capital calls depend on investments in young companies not ready for exits and therefore the link to markets is less important. Drawdowns tend to follow a reasonably predictable schedule, but show marked differences between investment environments (see Figure 10.10).

Although the private equity market is very cyclical, any environment does not necessarily resemble another historical period. For example, in the late 1990s, venture capitalists drew down capital at unprecedented rates with untypical returns. Historical data for any previous period provided a poor template for modelling these vintages. Moreover, there is little historical data available for European funds. US funds raised in the early and mid-1980s had dismal returns with little growth in valuations and delayed distributions (see Figure 10.11). The incompleteness of the cash flow library and the non-availability of data in general pose restrictions to such an approach. Monitoring feedback and expert opinion are also fed back into the models.

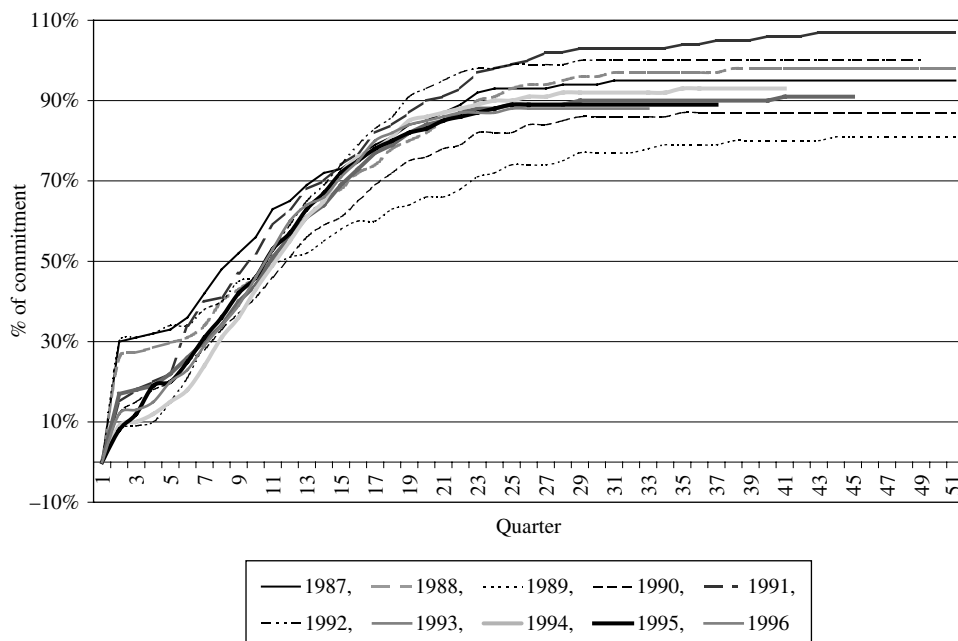
#### 10.4.2.2 Link to market data

For distributions, the pattern appears to be less predictable than for contributions (see Figure 10.12): Differences are even more pronounced for the US market (see Figure 10.13).



**Figure 10.10** EU VC funds (vintages 1987–1996)—cumulative paid in  
*Source:* Thomson Venture Economics (VentureXpert database).





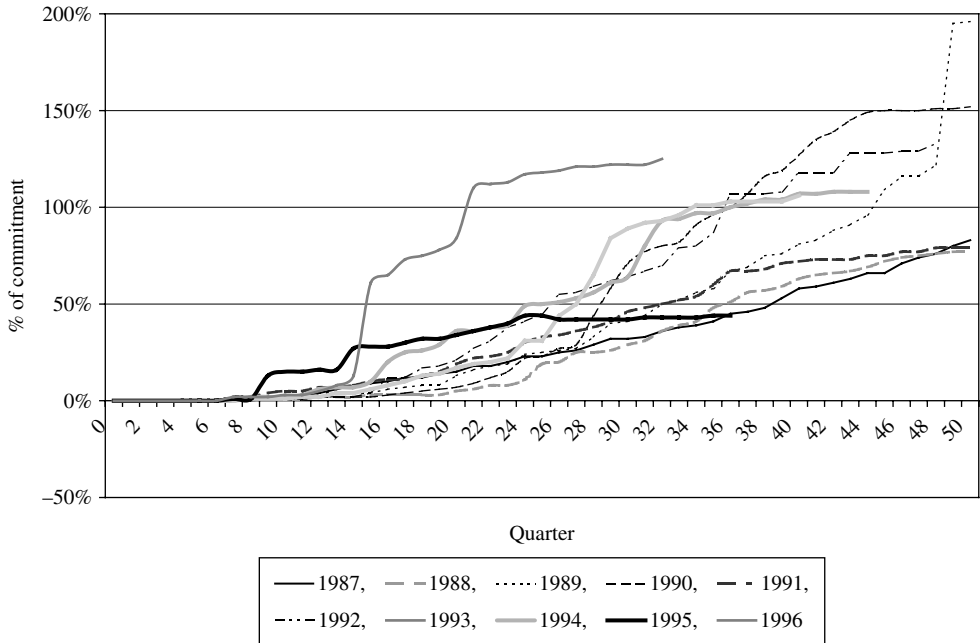
**Figure 10.11** US VC funds (vintages 1987–1996)—cumulative paid in  
*Source:* Thomson Venture Economics (VentureXpert database).

Private equity managers are unable to invest or divest on short notice; although they cannot take advantage of daily market fluctuations, one can assume that they consider the relative market valuation on a quarterly or yearly time horizon. Nowak, Knigge & Schmidt (2004) used the NASDAQ Composite as main market valuation proxy and found that the majority of fund managers attempt to time the market during the divestment stage. For this reason, public market indices can be part of an econometric model. Small company equity markets generally represent the market that serves as the primary exit vehicle for private equity investments (either through IPO or via company valuation in the case of mergers and acquisitions).

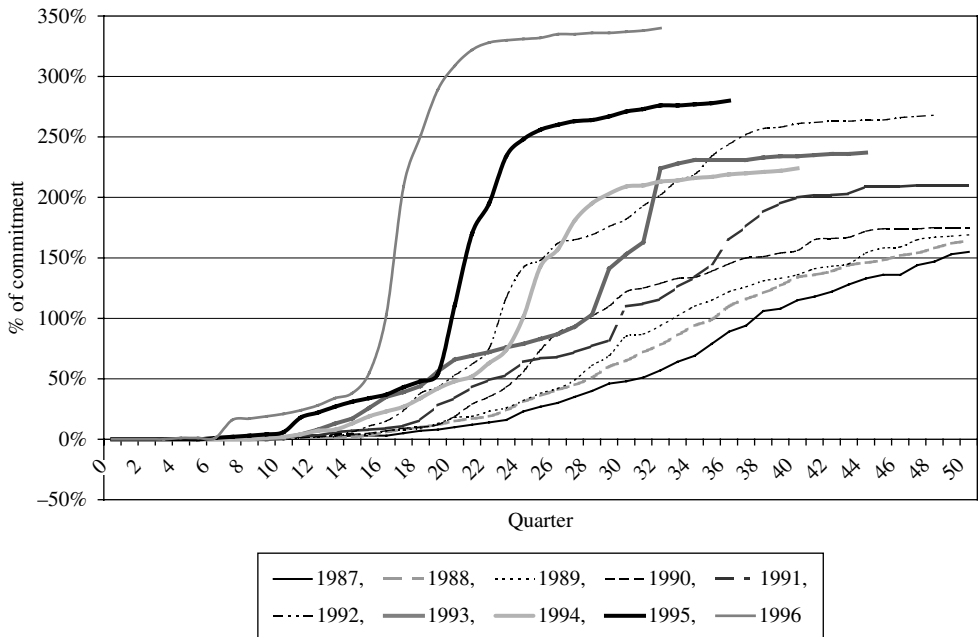
Despite its plausibility, our analysis of cash flow data over the time period 2001–2004<sup>30</sup> has not revealed a strikingly clear and simple relationship between venture capital fund exit patterns and small cap indices. To be of any predictive value, econometric forecasts need to consider several explanatory variables, and therefore carry significant model risk, also associated with the low data availability and quality inherent in private equity.

A continuous review and validation of input parameters and results is critical. Consequently, we believe that all trend-based forecasting approaches can only be used with a stern “health warning”. They should only be used in conjunction with alternative approaches as “reality checks”. For example, results should be consistent with the assumed scenario. Blindly following econometric models representing a specific market environment is an “accident waiting to happen”.

<sup>30</sup> These venture capital funds managed by the European Investment Fund are rather representative for a relatively flat market environment.



**Figure 10.12** EU VC funds (vintages 1987–1996)—cumulative distribution  
*Source:* Thomson Venture Economics (VentureXpert database).



**Figure 10.13** US VC funds (vintages 1987–1996)—cumulative distribution  
*Source:* Thomson Venture Economics (VentureXpert database).

### 10.4.3 Scenarios

While forecasting gives the “most likely” picture of the future against which plans can be judged, long-term projections in particular are associated with considerable uncertainty, regardless of the kind of forecasting problem. If the environment changes radically, statistical extrapolation techniques fail. As forecasts do not communicate uncertainty—especially in the venture capital industry, which thrives on innovation—reliable forecasting has its natural limits. The nearer term one looks, the more predictable. In the very short term most people are inclined to estimate or forecast, whereas long-term planning relies on scenarios. Scenarios are a set of reasonably plausible but structurally different futures, and are a useful tool for setting out a course in the face of significant uncertainty.<sup>31</sup>

Scenarios can be an individual’s isolated opinion or can be discussed in groups,<sup>32</sup> e.g. using the Delphi method, in which experts are polled as to their views. This approach is built on the assumption that some people can be more expert than others in predicting what will happen, or in excluding what will not happen. This expertise is based on experience, closeness to markets and access to privileged information. Another feature of scenarios is that they are abstract, simplified, and do not consider the same level of detail as forecasts. Consequently, their results lack precision and often cannot differentiate between the natures of cash flows. The assumptions underlying the scenarios need to be documented. Also “intervention points” need to be defined. Under which circumstances should the scenario be seen as invalid? When is a new round of scenarios development required? The scenario development helps us to think the process through, to understand the environment better and to enhance the capability to recognise unexpected events.

Partners Group analysed empirical cash flow patterns of US venture capital funds during different time periods and found marked differences between averages of the periods 1981–1985, 1986–1990 and 1991–1995.<sup>33</sup> For illustration we took a look at three different time periods with the scenarios “normal” (pre-1990) or “emerging” recession (1990–1993) and post-1993 “boom”. This was, of course, very simplified; nevertheless Figure 10.14 suggests that scenarios can be quite different.

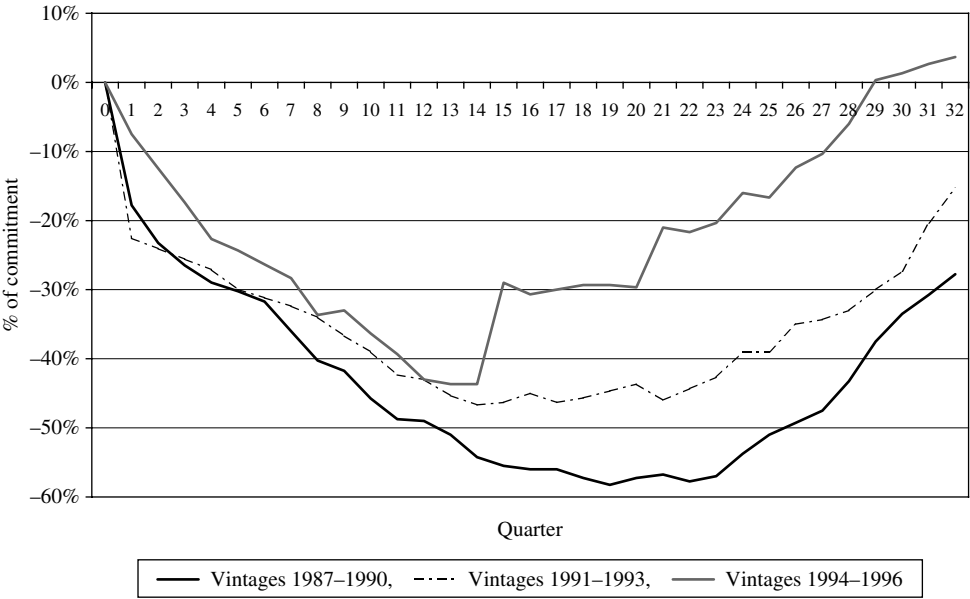
While differences for the European venture capital market are not as pronounced as those of the USA (see Figure 10.15), they nevertheless can be significant and form the basis for a scenario discussion.

For a private equity funds investment programme, a scenario-based tool like the Yale model (see above) could aid the strategic commitment steering. This model considers NAVs, commitments, drawdowns, repayments, funds’ lifetimes, exit patterns and growth rates. It does not give variances but only averages. The variety of possible outcomes is not described by volatilities, but approximated through the choice of scenarios. In Chapter 13, we describe an expected performance grading-based methodology to provide the required growth rates, i.e. the expected IRRs, to refine this model. It is critical to regularly review the adequacy of the chosen scenarios and the validity of the underlying assumptions. Changes in the assumptions will lead to a new scenario-planning step.

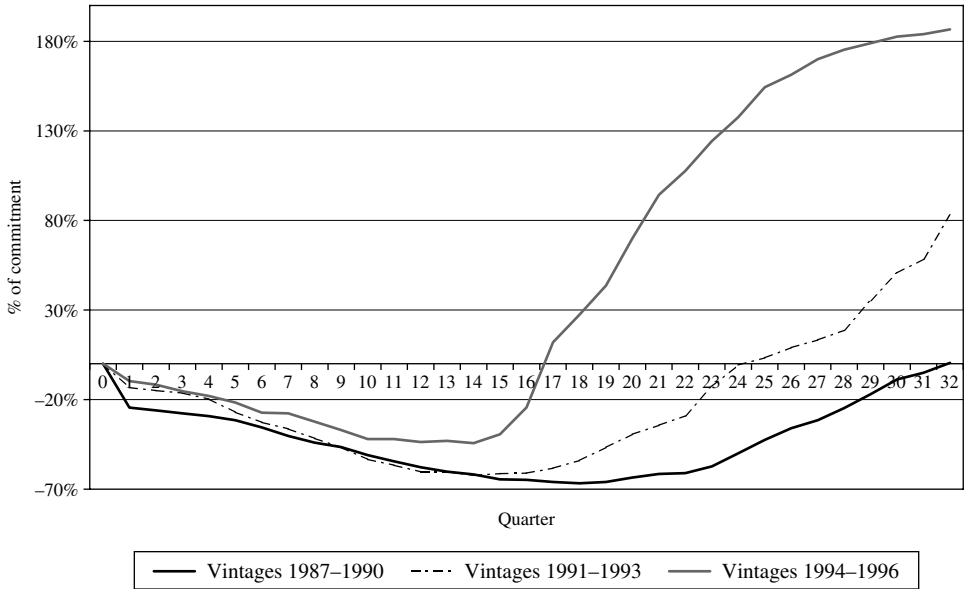
<sup>31</sup> See van der Heijden (1996).

<sup>32</sup> Surowiecki (2004) argues that the collective also beats the individual expertise in smaller groups, and identified as necessary conditions the diversity and independence of experts and well-defined mechanisms for aggregating and producing collective judgement.

<sup>33</sup> See Wietlisbach (2002).



**Figure 10.14** Cumulative cash flow scenarios EU VC funds  
Source: Thomson Venture Economics (VentureXpert database).



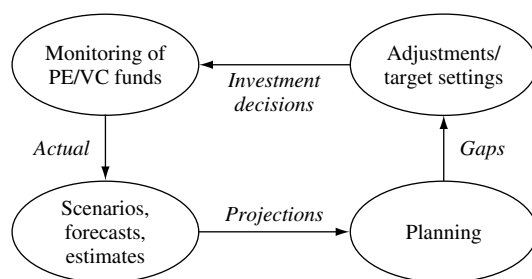
**Figure 10.15** Cumulative cash flow scenarios US VC funds  
Source: Thomson Venture Economics (VentureXpert database).

### 10.4.4 Control framework

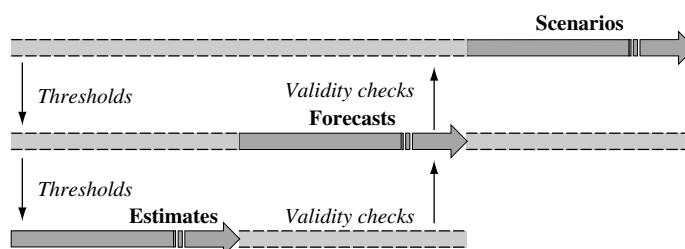
A well-managed liquidity management process is an integral part of a private equity funds investment programme investment strategy. It should be seen as a control system (see Figure 10.16) where the monitoring of the private equity funds provides the actual situation and inputs for projection models (see also Appendix 10C). Projections are compared against plans. The differences lead to adjustments or revised target settings that have an impact on the new investments in private equity funds and on the investment of the undrawn capital.

Due to the opaque nature of the private equity market and its inefficiencies, reliable projections pose a significant challenge. We have discussed various approaches—estimates, forecasts, and scenarios—to project liquidity streams for a private equity funds investment programme. These approaches follow different principles and all of them have advantages, drawbacks and overlaps; they therefore need to be used in parallel (see Figure 10.17).

For short-term forecasts, preference is given to estimates. Forecasts serve mainly as checks. And deviations are only tolerated up to certain thresholds (set by management or as the output of models) that define intervention points. Occasionally the generated results are conflicting. Even within an assumed scenario, short-term events that put the programme into jeopardy can make the long-term implications irrelevant. Rather than seeing such discrepancies as a problem, they themselves provide valuable information, as they challenge assumptions and are critical for management in an uncertain environment.



**Figure 10.16** Control framework



**Figure 10.17** Use of projection approaches

## 10.5 CONCLUSION

The main instrument for smoothing cash flows and increasing their predictability is a high degree of diversification, especially over the vintage years. Here private equity funds that are already in the cash-generating mode can offset drawdowns from funds in their investment phase. It is easy to see why private equity funds investment programmes with a short overall lifetime cannot make full use of a high vintage year spread. Moreover, the need for a programme manager to efficiently put the money to work often forces an opportunistic investment approach, to the detriment of a well-balanced portfolio structure. While it is desirable to strive for a defined split, e.g. of venture capital vs. buyout funds, established fund managers vs. first-time teams, US- vs. Europe-based funds, etc., very often these target private equity funds are not fund-raising or are inaccessible when required for the portfolio balance. One way of increasing the vintage year spread is the acquisition of reasonably mature portfolios. However, this requires skill in doing secondary transactions. As such quality secondary investment opportunities are also often rare, this may not always be a feasible option.

Another way would be the extension of the investment programme or, in the extreme, to set it up as an “evergreen” program. As this increases the illiquidity of the programme even further, it may only be an option for institutional investors such as pension funds or life insurance companies that need to match significant long-term liabilities as part of their asset liability management. With an increased lifetime of the overall investment programme, the importance of the liquidity management also grows, and also the selection of new private equity funds ideally becomes part of a fully integrated investment management.

Private equity is an “alpha-seeking” asset class; an overly high level of diversification works against this. Special structures, such as collateralised fund obligations that rely on a highly predictable cash flow pattern and are therefore forced to over-diversify, achieve the returns to their shareholders via the leverage between debt and equity. For typical programmes, however, there is clearly a trade-off between investment and liquidity risk. A sophisticated liquidity management can boost a programme’s yearly return without increasing the inherent risk. These are good reasons for greater emphasis on this aspect of private equity investing.

## APPENDIX 10A: CASH FLOW ESTIMATION TECHNIQUE

### 10A.1 CASH FLOW ESTIMATE—EXAMPLE 1

Management fees are fixed according to contractual terms. Their amount is certain and the timing is within a short time window. Management fees need to be paid according to a defined schedule.

### 10A.2 CASH FLOW ESTIMATE—EXAMPLE 2

The second example is a drawdowns for a further financing round of an existing portfolio company. This piece of information can be the result of a discussion with the general partner in the course of monitoring, when the progress of individual investments is discussed. Very often a new financing round is even specifically referred to in the fund’s quarterly investment reports. Although typically amount and timing are vague, experienced investment managers can make a reasonably safe bet.

**Table 10.4** Example 1—management fees

Cash flow identification:			
Organisation/mandate from:		#1 Fund-of-funds VC fund	
Organisation/mandate to:			
Type:		Management fees	
Basis for forecast:		LP agreement	
Date	Maximum	10 July 20XX	Probability
	Median	5 July 20XX	20%
	Minimum	1 July 20XX	60%
	Currency	EUR	20%
Amount	Maximum	N/A	Probability
	Median	100,000	N/A
	Minimum	N/A	100%
			N/A

**Table 10.5** Example 2—drawdown

Cash flow identification:			
Organisation/mandate from:		#2 Fund-of-funds VC fund	
Organisation/mandate to:			
Type:	Drawdown		
Basis for forecast:	Discussion with GP, last quarterly report		
Date	Maximum	End September 20XX	Probability
	Median	Mid-August 20XX	30%
	Minimum	Beginning July 20XX	30%
	Currency	EUR	Probability
Amount	Maximum	100,000	10%
	Median	50,000	70%
	Minimum	0	20%

The probability adds up to less than 100%, which reflects the possibility that the fund manager, for various reasons (e.g. shortage of funding for more promising investments) decides not to further finance the investment or would even write it off. A minimum amount of €0 reflects the possibility that, although the company is further financed by other VC funds, this specific VC fund abstains from the capital round. The expected amount of €50,000 can be estimated, based on the investee company's current cash-burning status and the VC fund's typical financing *modus operandi*. Of course, that requires a high level of familiarity with the VC fund.

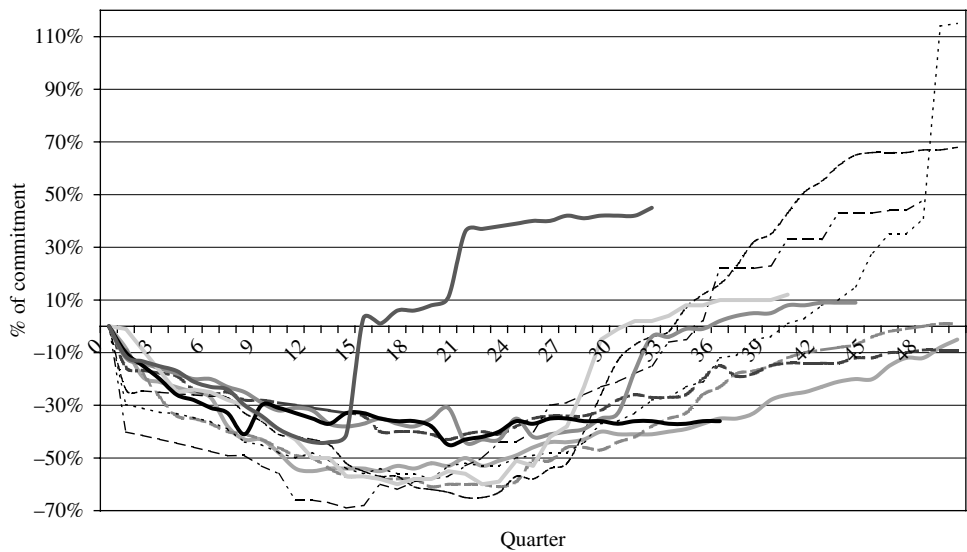
### 10A.3 CASH FLOW ESTIMATE—EXAMPLE 3

Repayment of capital is one of the more “heroic” guesses, as only in rare situations is this disclosed. Consequently, uncertainty is reflected in longer time intervals and a significant probability that the cash flow does not take place at all.

**Table 10.6** Example 3—repayment

Cash flow identification:			
Organisation/mandate from:		#3 Fund-of-funds VC fund	
Organisation/mandate to:			
Type:		Repayment	
Basis for forecast:		Amount estimate based on EVCA valuation, market comparable multiple and timing own estimate	
Date	Maximum	4th quarter 20XX	Probability
	Median	End September 20XX	20%
	Minimum	3rd quarter 20XX	20%
	Currency	EUR	Probability
Amount	Maximum	250,000	30%
	Median	150,000	40%
	Minimum	50,000	30%

APPENDIX 10B: CUMULATIVE NET CASH FLOW STATISTICS

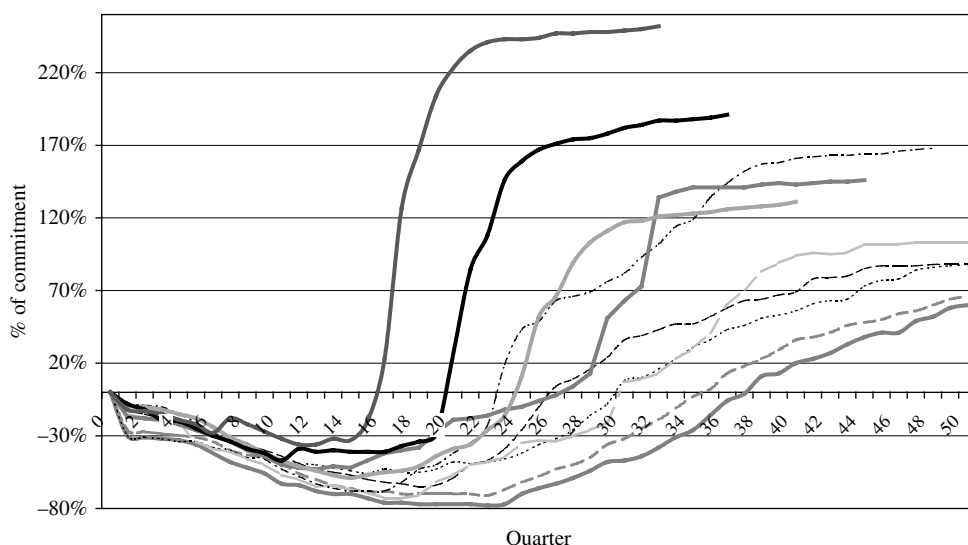


**Figure 10.18** EU VC funds (Vintages 1987–1996)—cumulative net cash flows  
*Source:* Thomson Venture Economics (VentureXpert database).

APPENDIX 10C: LIQUIDITY MANAGEMENT TESTS

Projecting and planning require an integrated framework to manage adherence to the plan. A control system is built on a series of tests that need to be tracked systematically in a liquidity management report. Items covered in such a report should be, for example, an





**Figure 10.19** US VC funds (vintages 1987–1996)—cumulative net cash flows  
*Source:* Thomson Venture Economics (VentureXpert database).

overview of the current market environment, an outlook, a discussion on the validity of the assumed scenarios, or comments on liquidity and performance measures. Ratios should form part of any liquidity management control system. A systematic tracking of forecasted against actual cash flows with a regular follow-up is required to fine-tune the forecasts.

### 10C.1 MAIN TESTS

If over-commitment level is reached, no further resources can be used for reinvestment:

$$\text{Over-commitment ratio} \leq \text{Threshold}$$

### 10C.2 LIQUIDITY TESTS

Liquidity tests monitor whether the programme is still meeting the demands under the assumption that the portfolio is progressing as planned. As no cash flow projection is precise enough, it needs to be assured that there is sufficient “base” liquidity (first-line liquidity need) for reinvestment and the set plan:

$$\text{Cash} > \text{Threshold}$$

Ensure that there are sufficient resources to meet undrawn commitments (second-line liquidity need):

$$\frac{\text{Undrawn commitments}}{\text{Cash} + \text{undrawn capital}} < \text{Threshold}$$

If resources are invested, then the ability to commit to new funds is reduced or stopped entirely (see above):

$$\frac{\text{Resources}}{\text{Cash} + \text{undrawn capital}} > \text{Threshold}$$

### 10C.3 PERFORMANCE TESTS

Performance tests monitor whether the portfolio is progressing in line with the plan and the assumed scenario. If the portfolio is not progressing as expected, future resources planned for will not be provided as expected. Valuations should represent the economic value of the private equity funds, rather than an accounting rule-based value such as the NAV, otherwise resources are cut off when market prices are down and could potentially offer more attractive investment opportunities.

Conservative accounting figures overshoot on the lower and are likely to lead to cyclical behaviour. No reinvestment should be undertaken if too few resources remain compared to the investments. Commitments are restricted if private equity fund returns are poor:

$$\frac{\text{Resources}}{\text{Portfolio value} + \text{undrawn capital}} > \text{Threshold}$$

### 10C.4 MATCHING TESTS

Compilation of a maturity profile involves categorising private equity funds and assets covering the undrawn commitments into maturity bands. The net position in each maturity band shows the mismatching of both sides for this band. The pattern is indicative for the cumulative net mismatch and shows the timing and exposure to liquidity risk.

### 10C.5 SCENARIO VALIDITY TESTS

Is the observed development of the portfolio and the economic environment in line with the assumptions underlying the currently agreed scenario, or when is a scenario not in line with actual development? A series of qualitative and also quantitative criteria need to be taken into consideration. For example, comparison of the average internal age<sup>34</sup> of a fund with calendar age (ratio of real age of fund compared to the legal lifetime of the fund, also between 0 and 1) of a private equity fund can give an indication of whether it is a “quick” exit environment or not.

$$\text{Lower threshold} \leq \frac{\text{avg \{internal age\}}}{\text{avg \{calendar age\}}} \leq \text{Upper threshold}$$

A protracted low-frequency exit environment should generally lead to higher liquidity buffers, as refinancing will also become more difficult.

<sup>34</sup> See Meyer & Weidig (2003): “The internal age is the measure of how far advanced the fund at the time of the cash flows is in the investment and divestment of its companies. The internal age at a given time is then half the sum of the investment and of the divestment ratio and gives a ratio between 0 and 1”.



## **Part III**

### **Design Tools**



## Established Approaches to Fund Valuation

Portfolio management depends on suitable valuation techniques. Before one can discuss the risk and return trade-offs of investments, one has to evaluate their risks. A risk assessment is based on a valuation model, as one needs to understand the factors that could lead to value changes. This chapter focuses on valuation issues relating to venture capital fund investments in early-stage technology innovation-oriented companies. Valuation techniques for buyouts, where debt is sometimes traded and can be the basis for a valuation, are often not applicable to venture capital with its focus on technological innovation, as a range of intangibles has to be taken into account. For the management of a portfolio of funds, ideally there should be only one technique applicable to all types of private equity.

Surprisingly, the valuation of private equity funds is a subject rarely touched upon in financial literature. For limited partners, the main reasons for valuing a fund are:

- They require a true and fair value for accounting purposes.
- They themselves need to show a verifiable track record to attract new investors, or to maintain or increase their allocation to private equity.
- They need to project cash flows, assess risk and measure performance in order to manage their portfolio and steer their overall strategy.
- Occasionally, they may engage in secondary or securitisation transactions to sell off or acquire a stake in an existing fund or a portfolio of funds.

The accounting approach commonly followed bases the valuation of funds on the reported net asset value (NAV). Due to the lack of a liquid market where interests in private equity funds could be bought and sold, rating agencies like Standard & Poor's<sup>1</sup> or Fitch<sup>2</sup> see the value of a private equity fund's portfolio as that ascribed to it by the fund manager. The main support for the general partner's valuation would be a review by an external party, e.g. by the auditor of the respective partnership.

---

<sup>1</sup> See Cheung, Kapoor & Howley (2003): "Moreover, due to the illiquid nature of private equity, a value, whether it is a 'fair value' or 'market value', on its own does not help to address the question of how a private equity asset pool can meet the cash flow needs of the debt it is backing. Therefore, in judging the relative performance of private equity fund of funds managers, Standard & Poor's will focus on cash flows rather than on the behavior of the general partner-marked NAVs".

<sup>2</sup> See Moise et al. (2003): "The purchase price of the portfolio will be the aggregate value of the partnership interest with each valued, proportionate to its share, at the lowest of (1) the net asset value of the fund as officially reported by its general partner, (2) DB Capital Partners' official valuation of the fund, and (3) the independent valuation of the fund as provided by the independent valuation provider, Bearing Point, Inc.".

## 11.1 BOTTOM-UP APPROACH TO PRIVATE EQUITY FUND VALUATION

Generally, investors appear to look at NAVs because they prefer current and reliable information than information that is based on expectations about the future. Limited partnership shares have been traditionally valued by taking the NAV divided by percentage share owned. This is a bottom-up technique where individual companies are valued (normally according to industry valuation guidelines) and then aggregated to get the private equity fund value. This approach is typically taken *faute de mieux* and in analogy to the valuation done for funds of publicly quoted securities, where it is theoretically possible to break up the fund and sell off the positions immediately and individually.

In private equity, and especially in venture capital, such a break-up assumption underlying a bottom-up valuation approach has to be challenged. The goal of private equity investing is to earn attractive long-term returns, rather than try to profit from short-term movements. In private equity, a “fire sale” mentality is problematic. As Nobel Prize winner George Akerlof concluded in his research on the “market for lemons”, where information is asymmetric – one side knows more than the other – the market might fail to work and one cannot sell it at any price. Private equity is rather a buy-and-hold investment where companies are developed over a substantial time period. Regardless of how current market sentiments stand, the general partners have a fair chance of timing the exit. From the limited partner’s viewpoint, valuations will be very different, depending on whether the investment is held until maturity or whether an exit is intended before the end of a fund’s lifetime.

We argue that a bottom-up valuation approach, where individual companies are valued, normally according to industry valuation guidelines, and then aggregated to get the fund value, gives a result that is often nowhere close to the economic reality of the fund. In order to be fair, such value needs to be equal to the net present value (NPV), i.e. the present value of the fund’s expected cash flows. Assuming that, in line with the new valuation guidelines according to AFIC, BVCA & EVCA (2004),<sup>3</sup> the fair value of the individual companies can be determined, we still believe that, especially for young private equity funds, for the following reasons their aggregation often cannot provide limited partners with the economic value of a private equity fund:

- *Undrawn commitments.* The expected future cash flows of a private equity fund are generated not only out of the NAV but also out of investments still to be made.<sup>4</sup> During the first years of a fund’s life, the main value to be created will depend on the fund manager’s future activities. For successful teams, the fair value of the existing portfolio may fall short in expressing the total value to be created. And for “lemons”, writing-down the portfolio to its fair value may be insufficient to cover the existing losses and the ones to be expected from the future investments.

*Second, in many secondary transactions, there are unfunded commitments where the quality of the manager is crucial in determining how those commitments will be invested.*

Cheung *et al.* (2003)

<sup>3</sup> The AFIC, BVCA & EVCA (2004) initiative addresses the fair value of private equity-funded companies.

<sup>4</sup> This view is also supported and therefore more consistent with the treatment of undrawn commitments under the New Basel Accord. According to the Basel Committee on Banking Supervision, the undrawn commitments to private equity funds also need to be risk-weighted ([http://www.bis.org/bcbqs/qis/qis3qa\\_o.htm](http://www.bis.org/bcbqs/qis/qis3qa_o.htm)).

- *Private equity fund added (or deducted!) value.* If one accepts that the management team of a private equity fund adds significant value to the private equity companies, this value added should be reflected.
- *Future fund expense.* A valuation based only on the current status of the portfolio ignores the fact that, as these fair portfolio companies values will not be realised now but over the remaining lifetime of the fund, additional management fees, expenses and eventually carried interest will be charged against the fund and reduce the cash flows to the investors and, therefore, the fund value.
- *Capital constraints.* Even if an investee company theoretically has a value during the early investment stages, success will depend on the fund's intentions going forward. Most of the time investee companies are technically insolvent, as financing is typically through various rounds with ratchet mechanisms and milestones. At any time, the fund might exercise the implicit "option to abandon", should better projects be around. Ultimately valuation is a matter of negotiation, where much depends on a fund's position in the market. In the extreme where a fund has no liquidity left, it is either forced to abandon a promising investment or has to accept a highly unfavourable valuation.

In situations where investors want to acquire a limited partnership share "second-hand" and need to put their money where their mouth is, they will not base their valuation on the NAV alone. As McGrady (2002a) recommended in the context of such secondary transactions, it *"is best to advise clients to view the asset being sold as the sum of the current net asset value and the future commitments to be assumed by the buyer. The seller must realise they are selling more than just the assets currently in the portfolio; they are also transferring the legal obligation to make all future capital calls . . . The buyer must then assess the value he places on the unfunded portion of the commitment. To gauge the reaction to the unfunded portion, a seller may consider the ease with which the general partnership could raise another fund in the current market . . . However, this uncalled commitment is an important aspect of the transaction, and its transfer may be a primary motivator of the seller . . . In a secondary transaction, the buyer must pay for the current assets, and must assume the liability of the unfunded capital commitments"*.

### **Box 11.1: Transactions before maturity**

Occasionally investors attempt to exit their investments in private equity funds before maturity. For them there are two main exit routes:

- *Secondary transactions.* A secondary market<sup>a</sup> for limited partnership shares exists, although it is expected to remain inefficient and illiquid. Often the stake in a private equity fund cannot be sold off without the consent of the general partners, and possibly that of other limited partners.
- *Securitisation.* Transfer of limited partnership share to a special purpose vehicle (SPV) for a collateralised fund obligation (CFO). The SPV issues senior and junior

<sup>a</sup>See McCune (2001): "*. . . to speak of a market is a misnomer—there is not a market in a conventional sense. No established market rules, forms, procedures or customs exist*".



notes, and their proceeds are invested in a private equity fund-of-funds (for such securitizations, see Tierney & Folkerts-Landau, 2001).

We will discuss secondaries and securisations in more detail in Chapter 20. As a rule of thumb and under the recent market conditions, in a secondary transaction for leveraged buyout funds discounts to the NAV as reported by the general partners were 15–20%.<sup>b</sup> For “better” venture capital fund these discounts were 30–35%, while for the others this figure is in a 40–45% range or even more. Counterparties usually have vastly different liquidity or risk constraints. Therefore, it is questionable whether such secondary transactions really are between “willing seller and willing buyer, when neither is acting under compulsion”, and whether they could be described as “fair”.

CFOs are typically seen as an attractive alternative to secondary sales to increase the liquidity of a fund-of-funds portfolio. According to sources close to the Silver Leaf transaction (see Moise *et al.*, 2003), valuations resulted in a haircut of 5–7% to be applied to the general partners’ NAV. These discounts were applied to compensate for errors or staleness in valuations. For a CFO private equity fund investments are transferred to an SPV, but the fund-of-funds manager, i.e. the seller, is typically required to hold the junior notes.

As the leverage of the CFO hits the junior notes first in the case of losses, an overvaluation would penalise first the investor in these notes. Indeed, as the junior note holder also participates disproportionately in their out-performance, the error should be more on the conservative side and there is arguably less pressure to come up with “precise” valuations. To put it differently, for an investor transferring limited partners’ shares to a SPV and holding the SPV’s junior notes, there is a higher penalty for overvaluing—as it increases the probability of the SPV defaulting with the associated adverse impact on the investor’s reputation—than for undervaluing. Consequently the arms-length character of this transaction is doubtful.

<sup>b</sup>See Cheung, Kapoor & Howley (2003): “*The nascent secondary market in private equity typically imposes deep liquidity discounts on self-marked GP values. One of the driving imperatives in exploring securitization of private equity interests is to be able to monetize these interests recognizing the long-term illiquid nature of the assets and provide a liquidity alternative in addition to the nascent secondary markets, which do have associated with them sale execution values that are deeply discounted from GP values. Hence Standard & Poor’s focuses on developing a description of private equity risk–return on a cash flow basis, rather than ascribing values to private equity interests in the absence of a liquid market for those interests.*”

In the following we will argue that not only is it difficult to value portfolio companies, but they often cannot even be valued out of the context of the fund and its managing general partners. Certainly it is always possible to put a value behind an asset, but often the level of uncertainty will make this a futile exercise. In venture capital the long-term investment horizon, the level of risk, the lack of comparables and the opaqueness of the market result in extreme uncertainty. Because a bottom-up approach has its clear limits, we later on propose a top-down approach to private equity fund valuation that, although occasionally less precise than a bottom-up approach, can overcome these obstacles and will work under all circumstances.

## 11.2 INCONSISTENCY OF VALUATIONS

Studies of the private equity industry generally suffer from lack of information.<sup>5</sup> In venture capital as an information-poor environment,<sup>6</sup> therefore, even an independent review has its limits. Although a “fair market value” approach has broad acceptance in principle, it is often seen as difficult to achieve for investments without a readily available market and long-term horizon.<sup>7</sup>

For limited partnership shares, a marking-to-market is meaningless.<sup>8</sup> The repeated calls for industry-wide standardisation of guidelines acknowledges that there is no market and aims to make valuations between funds at least comparable.<sup>9</sup> The general partner may be one of just a handful of people evaluating its worth. Consequently, there is little consensus and validation through alternative valuation techniques. In the first few years of a fund, the inherent uncertain nature of the value of an early-stage unquoted company means that the variation among funds is often the result of their different valuation policies. So it might be that fund A’s general partners are just more conservative and the fund is therefore not really performing worse than fund B.<sup>10</sup>

An increasing standardisation of valuation guidelines eases comparisons between funds and therefore is highly useful for the limited partners. However, one cannot expect that valuations derived from these guidelines correspond to the price a seller could expect in the market.

## 11.3 NAVs DO NOT TELL THE FULL PICTURE

The NAV can only be a proxy for the fair value of the portfolio companies,<sup>11</sup> while the limited partner is primarily interested in the fund’s economic value. To be useful for the

<sup>5</sup> See Ljungqvist & Richardson (2003): “Four recent papers have attempted to quantify the returns and risk of private equity . . . The general conclusion from these papers regarding private equity performance is mixed and these differences can partly be attributed to the quality of data”; or Stein (2003): “Right now, there is almost no accurate and reliable information about venture capital returns”.

<sup>6</sup> See Diem (2002).

<sup>7</sup> It may even be subject to abuse, as evidenced by the scandal around Enron and their “marking-to-model” long-term energy contracts.

<sup>8</sup> See Cheung, Kapoor & Howley (2003): “Public and private equity exhibit qualitative and quantitative differences among their observable variables. Net asset values (NAVs) associated with traded securities characterize public equity. Cash flow investment (drawdown) and realization (distribution) streams characterize private equity. Due to the lack of a liquid market where interests in private equity can be acquired or sold, they do not have NAVs associated with them that are comparable to public equities. General partners do ascribe values to their private equity portfolios and they can keep the value at cost or mark it up, and not mark it down until an obvious degradation in the portfolios earning potential has occurred . . . Standard & Poor’s private equity risk analytics do not use NAVs reported in VE, or interim internal rates of returns (IRRs) calculated using those values”.

<sup>9</sup> For public markets, the framework for “fair value” is comparatively straightforward: the transaction time is equal to the valuation time, and the price is identical or at least very close to the valuation. An—in practice—“infinite” number of analysts and analytical tools is digesting all available information. The stock price at any due time reflects the aggregate opinion of thousands of market participants that have retrieved and evaluated a company’s financial information. The real-time exchange of various valuation results, demand and supply information leads to a very narrow band of consensus value and realisable price—because of arbitrage, effectively one “standard valuation tool” is applied to all investments. The valuation is verified through the transaction actually executed on the market. In the context of a portfolio of private equity funds, such a mechanism cannot be replicated. In private markets, various valuation tools are in use and transparency of the funds is too low to allow for standardisation, as too few parties participate and supply and demand do not match.

<sup>10</sup> See Stein (2003): “It’s all too common for LPs to rant about receiving three different valuations of the same portfolio company from three different venture funds. Colin Blaydon, a professor at the Tuck School of Business at Dartmouth College, argues that LPs are often unsure of which number to believe and may even suspect one of the firms is lying to them. This is a problem because LPs must report these numbers to their oversight boards, and, naturally, want them to be accurate”; or Blaydon & Horvath (2003b): “If there is an agreement on the principle that the valuation should be an assessment of market value, then differing valuations by VCs should reflect their different assessments of the company, not a mechanistic reliance on a particular ‘approved’ valuation calculation. LPs could then look at differing valuations as differing judgments about a company’s health and prospects and not as confusing contradictions that are hard to understand”.

<sup>11</sup> Although it is a questionable measure for early-stage investments, as their value is mainly based on intangibles.

management of a portfolio, a meaningful valuation technique should be applicable before doing the investment. As private equity funds are “blind pools”, the NAV fails this purpose entirely. Also, during the early years of a fund’s lifetime, when there are simply no portfolio companies or too few compared to the overall commitment size, the NAV cannot provide a meaningful yardstick for the limited partnership share’s value.

We need to differentiate between the value of the portfolio companies, as seen from the viewpoint of the general partner, and the value of the fund, comprising not only the portfolio companies but also the undrawn commitments and the quality of the general partner as intangible. It is fair to say that the NAV is often not even an approximation of the fund’s NPV or economic value. Under a break-up assumption it is too high, as the portfolio companies cannot be liquidated at the ascribed valuation, while as a fund’s terminal wealth it will often be too low. Let us take a look at the IRR, which is the discount rate that gives a NPV equal to zero:

$$\sum_{n=1}^{n=L} \frac{C_{Fn}}{(1 + IRR)^{t_n}} = 0$$

where  $C_{Fn}$  is the cash flow at time  $t_n$  and  $L$  is the lifetime. The interim IRR is a rough but widely used estimation of IRR performance and forms the basis of most published comparative performance statistics. For active funds, the interim IRR (IIRR) is computed by taking the NAV as the last cash flow at time  $T$ :

$$\sum_{n=1}^{t_n < T} \frac{C_{Fn}}{(1 + IIRR)^{t_n}} + \frac{NAV}{(1 + IIRR)^T} = 0$$

In the first years the interim IRR usually follows a J-curve (see Box 2.2) as it initially underestimates and only later converges to the final IRR. The equation can be sliced into three parts: the past cash flows from the portfolio, the future distributions of the current portfolio, and the future drawdowns and distributions for new investments, that generally cannot be stopped without becoming defaulting investor or selling the position.

$$\sum_{t=1}^{t \leq T} \frac{C_{Ft}^{PAST}}{(1 + IRR)^t} + \sum_{t \geq T} \frac{C_{Ft}^{PORT}}{(1 + IRR)^t} + \sum_{t \geq T} \frac{C_{Ft}^{NEW}}{(1 + IRR)^t} = 0$$

The NAVs approximate<sup>12</sup> the middle expression, but the interim IRR neglects the right-hand term, i.e. the future investments’ cash flows: the weight of these factors changes over time. Taken at face value, the NAV may lead to short-term thinking in the portfolio management. The expected future cash flows of a fund are generated not only out of the existing portfolio companies but also out of the investments to be made, i.e. the undrawn commitments. During the first years of a fund’s life, the majority of the value to be created will depend on the investments to be made. To form an opinion on the expected investment performance for a

<sup>12</sup> See Cheung, Kapoor & Howley (2003): “Private equity values represent the opinions of general partners rather than market-traded values and do not address the cash flow amount and timing, which are relevant in the securitization and must be addressed in the rating in a probabilistic framework”; or Blaydon & Horvath (2003a): “They are an interim report on the performance of the fund and rely on the GP’s assessment of unrealised current portfolio company values . . . The IRRs, publicly reported or not, are only as good as these underlying assessments . . . But what is missing is sufficient discussion of how the underlying assessments of company value are arrived at, other than to note that some funds may have widely differing assessments of the value of the same company, much to the frustration of LPs to whom these assessments are reported”.

**Table 11.1** IRR components assessment

IRR Component	Assessment
Past cash flows	Quantitative only
Current portfolio (NAV)	Quantitative, but qualitative review recommended
Future cash flows	Qualitative, based on historical data and scenarios

fund's entire lifetime, all three components of the IRR need to be assessed (see Table 11.1). A qualitative review of a fund's current portfolio could for example be based on cross-checking against valuations assigned by other private equity funds owning shares in the same portfolio company. This would give a range of possible values, but it is not necessarily the lowest value that is correct. Therefore, limited partners should have a valuation review policy in place. Such a review policy may consider the average valuation assigned to a portfolio company as its "fair market value". A refinement could be to take the "quality" of the appraising fund managers into consideration—which ties into the various "grading" approaches we will discuss in later chapters. Finally, for the assessment of the fund's future cash flows, as represented by the third part of the equation, a qualitative assessment of its general partner's quality is also required.

## 11.4 PORTFOLIO COMPANIES CANNOT BE VALUED IN ISOLATION

There is increasing pressure, mainly coming from frustrated investors, for increased transparency, with the objective of getting more "reliable" valuations. Various "schools of thought" contribute to this debate. At one extreme, a public market-like transparency is postulated for private equity.<sup>13</sup> This discussion, however, ignores the fact that venture capital is an appraised asset class (see Box 11.2) and valuations ascribed will nearly always lead to controversies. Ultimately, valuation is a matter of negotiation between buyer and seller, where a lot depends on a fund manager's position in the market.<sup>14</sup> In the extreme a fund has no liquidity left and is either forced to abandon a promising investment or has to accept a highly unfavourable valuation. Only a financially strong investor can sustain longer negotiation periods. A weak venture capital fund is simply in a worse position to "shop around" for several months while its portfolio burns the remaining liquidity. This is also evidenced

<sup>13</sup> See e.g. Richardson (2002): "Valuation methods will be standardized and private equity managers will be required to adhere to the same regulatory standards as public equity managers . . . The future will see private equity managers adopt the same requirements as public equity managers . . . Full disclosure, transparency and corporate governance will be accepted as a precondition of a business relationship between the private equity manager and the institutional client . . . Over the next 25 years, there will be a more formal standardization of valuation methodologies. The current criticism of the industry is that no two valuation methods are alike and that a private equity manager's returns should be taken with a grain of salt . . . In the future, private equity managers will employ independent validation practices in order to come to a more conservative 'fair value' for the underlying investments".

<sup>14</sup> This is even valid for secondary transactions of limited partnership shares; see McGrady (2002a): "If the seller has two weeks to make a capital call, the buyer knows the seller is highly motivated and less price sensitive".

by the fact that, in the context of secondary transactions, smaller portfolios are often priced at a discount to larger portfolios with the same investments.<sup>15</sup>

*First, management must realize that virtually all valuation is based on an analysis of the future market for the company's products. Except in asset purchase transactions, valuation typically assumes that the company is a "going concern". Given this, it is inappropriate to value a company based on its book or liquidation value . . . in as much as technology companies do not have tangible assets that can be readily valued, valuation based strictly on book value does not make sense.*

White (1999)

### **Box 11.2: Venture capital as appraised asset class**

Venture capital—like real estate, art or antiques—is an appraised asset class, valued not by the consensus of many market players but by a few experts.<sup>a</sup> Money is made when an asset is sold, and there is no day-to-day marking up or down. Rather than aiming to determine a price—which would generally be unrealisable in the market anyway and, ultimately, is a matter of negotiation—the main objective of the exercise is to determine whether the investment is developing as planned. In any case, the valuation of unquoted assets is of an arbitrary character, resulting in often striking differences in the figures presented by the general partner and other analysts. To form a judgement on the validity of valuations, an assessment of the general partner as appraiser is key, as the limited partners cannot do the appraisal of portfolio companies themselves. More than in any other asset class, there is a discrepancy between the undisclosed or even unknown economic value of a fund's portfolio and its industry guidelines-based NAV. Investments are done under the expectation that they generate a venture capital typical return in the high double-digit area. Consequently, a venture capitalist perceives the economic value of an investment much higher than what he puts in as funding. To disclose his perceived economic value would not only be imprudent *vis-à-vis* the limited partners but would also weaken the negotiation position *vis-à-vis* the entrepreneur in subsequent financing rounds. Moreover, the portfolio company could be permanently damaged if such appraisals become public and are misinterpreted. If even parties close to a company see it as a “lemon” it becomes next to impossible to find financiers or customers.

It is the prospect of the future value and not the current tangible value of the portfolio company that attracts the venture capitalist. A risk-averse or short-term-oriented investor will be unable to see any value in the typical venture capital investment. The assessment is highly judgemental and mainly based on comparables and “analogies”. One could argue that successful venture capital investing is a kind of “knowledge arbitrage”: no-one outside a small group of technical experts has the skill and experience to appraise the asset. Traditional financiers are not just unwilling to take the risks—they are mainly unable to evaluate them, as this requires judgement on the viability and applicability of technologies in the consumer market. “Ordinary” investors see a technical idea as

<sup>a</sup>See Cheung, Kapoor & Howley (2003): “Assigning an independent, and potentially unbiased, value to private equity investments is largely based on specialists who value each investment based on their views of the investment's earnings potential and/or comparisons with other investments”.

<sup>15</sup> See McGrady (2002a).

more risky, further away from realisation or with a lower market potential than these experts. Generally, with the lack of know-how also come greater opportunities for “insider trading” and to some degree the premiums in the venture capital market are a result of this mismatch. As over time more investors become familiar with the technology and its business application, pricing becomes efficient.

General partners “signal” their belief in the correctness of the valuation through co-investing a significant share of their own personal wealth. It is mainly the structuring of the fund and the alignment of interests between general partners and limited partners that assures that the fund’s portfolio really presents a “value”. It should be kept in mind that, specifically in the case of venture capital, outsiders are generally unable to form any judgement at all. There is certainly the nagging feeling that a critical piece of information could be provided additionally; however, this is elusive.<sup>b</sup> At the early stage of an investment any assessment will be nearly entirely based on qualitative soft factors.

Without opportunity for arbitrage, venture capital returns would drop to a level in line with the premiums paid for illiquidity, immature organisations and obligation for follow-on investments. Finally, if everybody would be able to measure the “true” value of a venture capital fund, this asset would become liquid. As premiums also depend on the limited supply of financing resulting in very selective investments, this would be self-defeating. As the venture capital bubble at the late 1990s showed, this market cannot absorb an unlimited amount of financing. Somehow, paradoxically, fund managers and their investors attempt to value something that draws a significant part of its success from not being able to be correctly valued.

---

<sup>b</sup>See Flag Venture Management (2002a): “Start-up companies simply have too many ‘moving parts’ each and every quarter ... a single contract or strategic partnership won or lost, product development delayed, a clinical trial approved, a patent awarded ... to permit a meaningful valuation for even the briefest period”.

As the main difference to a fund of publicly quoted assets, a private equity fund’s value usually cannot be seen as the aggregation of individual investment valuations. If one accepts that the fund management adds significant value to the portfolio companies, this value added should be reflected.<sup>16</sup> Even if a portfolio company theoretically has a value on its own, during the early investment stages success will depend on the fund manager’s intentions on going forward. Moreover, the value created by the fund manager can only be preserved or transferred under specific circumstances, i.e. the original fund manager remains the investor and is not diluted, or the new investor has not less resources and has the same objectives as the original investors.

Most of the time, early-stage portfolio companies are technically insolvent, as financing is typically through various rounds with ratchet mechanisms and milestones. At any time, the fund managers might exercise the implicit “option to abandon” should better projects be around. In a venture capital fund’s early years, write-offs are not necessarily bad but are part of the investment management process. Generally there are more promising start-ups than financing and there are more promising start-ups launched than completed. “Lemons ripen early” or “dogs die before winners run”, and the best managers will recognise their investment mistakes early and kill them off or exit at a loss quickly.

---

<sup>16</sup> An analogy with the public market would be the conglomerates, which normally (with the famous exception of GE) trade below the aggregate value of their components.

In fact, according to Inderst & Muennich (2003), this characterises the venture capital business model. The authors find that a commitment to “shallow pockets” is an optimal strategy when there is a high failure rate and high rewards in a case of having the right idea as opposed to some incremental improvements. Limiting the size of the funds raised initially can improve an investor’s ability to deal with entrepreneurial agency problems. It allows the fund managers to create competition for continuation finance between the various entrepreneurs in the portfolio and increases the investor’s ex-post bargaining power *vis-à-vis* entrepreneurs financed.<sup>17</sup> Moreover, limited financing may provide more powerful incentives, since even small changes in performance may be crucial in determining whether refinancing is obtained. As previously discussed, limited partnership agreements very often contain covenants that reduce the ability to raise further funds and hence render the commitment to ex-post more credible. Without constraints on financing the fund managers cannot credibly threaten to withhold further funding. Therefore, this gives the investor more bargaining power when entrepreneurs are forced to compete.<sup>18</sup>

We conclude that valuation needs to be done under the assumption that the investment is held over a longer term, developed and exited under favourable conditions. Specifically VC funds have the character of a portfolio of “financial projects” that can only be valued in totality and as a going concern.

## 11.5 CONCLUSION

It is a wrong perception that funds be marked-to-market. Despite the notions of “market value”, venture capital investments—be it individual portfolio companies or funds—get essentially “marked-to-model”.<sup>19</sup> Also, on the portfolio company level, general partners need to fill the gaps caused by the lack of observable prices by a modelling process typically based on business plans. One valuation technique is to take, for each portfolio company, the performance of a basket of public market comparables as a rough proxy for the fair market value. Although this is occasionally referred to as “marking-to-market”, this is a model-based approach that rests on the often heroic assumption that a start-up will perform in line with its comparables.<sup>20</sup> As a result, the NAV alone is a naïve model of a private equity fund’s value.

<sup>17</sup> The analysis is based on the observation that a venture capital funded company requires more than one injection of capital over time. Thus, shallow pockets become a powerful bargaining instrument. Moreover, this financing pattern provides another incentive for being very conservative in a portfolio company’s valuation. If the fund managers disclose what they believe to be the “real”—possibly very high—economic value, it becomes difficult to negotiate low valuations for new capital increases. In return, this would bolster the entrepreneur’s bargaining position. Pulling the plug out of an investment that fund managers believe to be worth millions is simply not a credible threat.

<sup>18</sup> Of course, an entrepreneur can try to obtain financing either from an uninformed outside investor. Outside investors are faced with a “lemon problem”, since they have less information on the quality of the project; this is sufficiently strong to prevent outside investors from providing finance to entrepreneurs.

<sup>19</sup> See Rattner *et al.* (2001): “The divergence in valuation practices is often further complicated by the lack of ‘transparency’ in GPs’ valuations combined with GPs’ confidentiality concerns. LPs often receive less information on valuation criteria . . . which leaves the interested LP unable to understand the GP’s valuation rationale . . . The mark-to-market method, by definition, is the only appropriate method to value public securities. However, GPs will sometimes still report different values for the same public security holdings due to adjustments made for illiquidity and other considerations”.

<sup>20</sup> See Blaydon & Horvath (2003a): “The VCs first identify a set of comparable public companies whose valuations are established by daily trading of their shares, and then they discount some average valuation from this set to reflect the added risk inherent in the privately held and often smaller, younger portfolio companies. The good thing about this approach is that it picks up changes in company valuation stemming from undiversifiable industry risk factors. The problem with the method in a down economy is that valuations change often and for reasons that may be specific to companies in the comparison portfolio set. The VC’s portfolio

Such illiquid and long-term-oriented assets are essentially marked-to-model and reported NAVs require a review by experienced investors. It is impractical to review the consistency of assumptions made by many fund managers and to ensure them for often thousands of portfolio companies. Finally, we have to deal with the question that committing to a private equity fund is investing into a blind pool.

---

*company may be in better shape than the public companies in the comparison set. As with other valuation approaches, VC construct their market portfolio for the same private company differently, which means conflicting conclusions reported to LPs”.*





## Benchmarking

Benchmarking aims to evaluate performance by comparison to a standard or a point of reference. The most intuitive approach is to compare against a group of funds that have a similar risk profile, i.e. with the same style or specialisation, also called a “peer group”. These funds are effectively the competitors of the fund to be benchmarked. We differentiate between two types of peer groups, which serve two distinct broad functions. First, there is the current peer group, which is composed of funds that are active during the same period as the fund to be evaluated. It can be used to assess the quality of a fund manager. Second, there is the historical peer group, which is composed of funds that were active during previous periods, and allows asset class research and forecasting. In this chapter, we first review the issues specific to private equity, then the benchmarking of individual funds and, finally, the portfolio of funds.

### 12.1 SPECIFIC ISSUES

Private equity being an appraised asset class, there are still discussion on the validity of benchmarks. According to Geltner & Ling (2000), appraisal-based peer universe benchmarks are, in principle, valid and useful tools for investment performance evaluation. However, Kelly (2002) sees private equity as an “*asset class nearly impossible to benchmark*”. The author raises the issue that there are sometimes too few samples within one vintage year to benchmark. Furthermore, he also mentions that very often the general partners are vague regarding the methodology used for calculating the reported returns (conservative or market-based NAV), making the comparison very difficult. Bailey, Richards & Tierney (1990) define the so-called “Bailey criteria” as characteristics for appropriate investment benchmarks:

- *Unambiguous/knowable.* The names and weights of assets that comprise the benchmark should be clearly identifiable. Private equity benchmarks only provide aggregate data and do not give a complete representation of the available opportunity set.
- *Investable.* The option is available to forgo active management and simply hold the benchmark. In an investment context, a benchmark represents the return to a passive investment strategy. It allows active investment decisions to be judged relative to the benchmark.<sup>1</sup> In private equity one cannot choose, as in public markets, between an active and a passive manager. It is notably this fundamental difference that explains why private equity portfolios exhibit widely diverging results.
- *Measurable.* It is possible to frequently calculate the benchmark performance. Private equity funds do not provide data that allow measuring accurately their risk and return characteristics. Valuation guidelines such as those put in place by various venture capital

---

<sup>1</sup> See McIntosh (2003).

associations define an appraisal policy to improve the coherence and consistency, which make the comparisons between funds more meaningful. However, the industry uses several performance measures, such as IRR or multiples, that can sometimes give very different pictures.

- *Specified in advance.* The benchmark is constructed and mutually agreed upon prior to the manager evaluation. Private equity is often perceived as an absolute return asset class. Consequently, benchmarks are of less relevance for the evaluation of managers, whose incentives are normally not based on an index.
- *Appropriate.* The benchmark is consistent with the manager's investment style. As the private equity market is continuously evolving, there is a risk of using an inappropriate evaluation benchmark. If a benchmark does not well represent the style or specialisation of the fund (e.g. in the case of emerging markets funds, or new technologies not yet presented in the benchmark), comparisons can be problematic.

Private equity benchmarks suffer deficiencies in nearly all of these dimensions. However, most of the time practitioners can live with these shortcomings or see them as irrelevant. For example, Venture Economics, Venture One, Cambridge Associates or Private Equity Intelligence are database providers for private equity investors. Their databases contain peer groups that can serve as benchmarks. It needs to be pointed out that private equity funds provide performance information mainly on a voluntary basis.<sup>2</sup> Also for this reason, these databases do not necessarily capture the same data sets and can show differences of several percentage points for some peer groups. Another common criticism is survivorship bias. It refers to the fact that managers or funds that perform poorly tend to go out of business and therefore drop out of the peer universe. As a result, statistical data will only cover the currently existing funds and present an average historical performance that is probably biased on the high side. On the other hand, according to Geltner & Ling (2000), it is not necessary to have a fixed and constant set of funds in the benchmark, and Swensen (2000) argues that survivorship bias may be less of a problem for long-term-oriented illiquid investments, as this population is not changing rapidly. Indeed, managers of private equity funds enter and exit the benchmark statistics with considerably less frequency than their counterparts focusing on traditional marketable securities, as the limited partnership structure precludes easy departure from the industry.

## 12.2 INDIVIDUAL FUNDS

### 12.2.1 Performance measures

Venture capital associations and the Association for Investment Management and Research (AIMR)<sup>3</sup> deem the IRR,<sup>4</sup> which is a cash-weighted rate of return, to be the most appropriate return measure for venture capital and private equity funds. AIMR recognises that when a

<sup>2</sup> See Shearburn & Griffiths (2002b) "*Precisely because private equity is private, published data in the field is not particularly reliable*".

<sup>3</sup> See Geltner & Ling (2000): "*In 1993, AIMR proposed performance measurement guidelines that recommended a time-weighted approach. After investors and fund managers expressed concerns, a special sub-committee of private equity industry investors and experts appointed by AIMR studied the applicability of time-weighted returns to the private equity industry. They recommended that fund managers and intermediaries present their private equity performance results on the cash-weighted IRR basis*".

<sup>4</sup> Note that as database providers are focusing on net return to the limited partners, it is the fund's net IRR and not the gross that has to be benchmarked. Also note that the NAV is a "gross" figure, i.e. before deduction of a possible carried interest for the general partner, while the cash flows are "net" to the limited partners.

management contract calls for a series of investments, spread out over time at the discretion of the manager, time-weighted rate of return-based performance measurement and evaluation are not appropriate.

The IRR is a cash flow-based return measure, which considers the residual value or NAV of the partnership's holdings as a final cash inflow. Mathematically, it is expressed as:

$$\sum_{i=0}^n \frac{CF_i}{(1 + IRR_n)^i} + \frac{NAV_n}{(1 + IRR_n)^n} = 0$$

where  $CF_i$  is the cash flow at the end of time period  $i$  between the fund and the investors,  $n$  is the number of periods,  $NAV_n$  is the latest NAV of the fund and  $IRR_n$  is the interim internal rate of return at time  $n$ .

The IRR is not the only measure used in the industry. Other performance measures are commonly used:

- The multiple, i.e. the total value to paid-in ratio (TVPI):

$$Multiple_n = \frac{\sum_{i=0}^n CIF_i + NAV_n}{\sum_{i=0}^n COF_i}$$

where  $CIF_i$  is the cash inflow at the end of time period  $i$  from the fund to the investors,  $COF_i$  is the cash outflow at the end of time period  $i$  from the investors to the fund,  $n$  is the number of periods and  $NAV_n$  is the latest NAV of the fund.

- The distribution to paid-in ratio (DPI), which is a measure of the cumulative investment returned relative to invested capital:

$$DPI_n = \frac{\sum_{i=0}^n CIF_i}{\sum_{i=0}^n COF_i}$$

- The residual value to paid-in (RVPI), which is a measure of how much of the investors' invested capital is still tied up in the equity of the fund:

$$RVPI_n = \frac{NAV_n}{\sum_{i=0}^n COF_i}$$

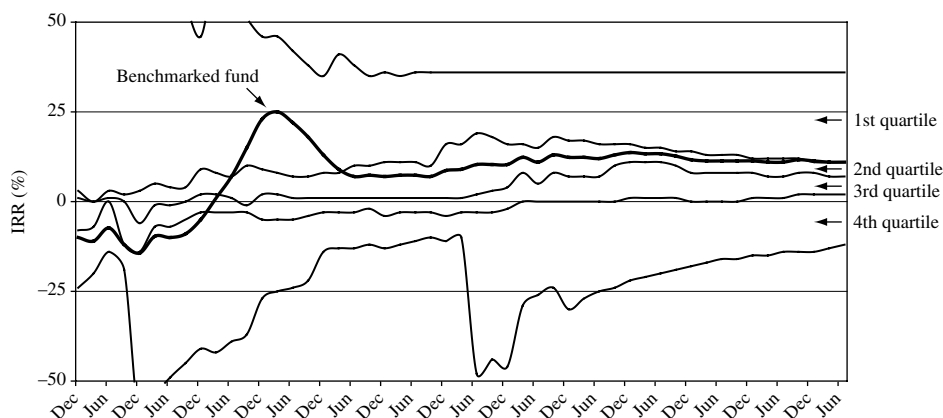
These ratios are measures of net returns to invested capital without taking the time value of money into account. It should also be stressed that the private equity industry does, in effect, attempt to appraise the NAV at the end of each quarter. Interim IRRs, TVPI and RVPI are computed based on these residual values. Their estimations are the most problematic components of return evaluation and are one of the main reasons why a quantitative benchmarking has to be complemented by a qualitative analysis.

### 12.2.2 Classical relative benchmarks

Many investors try to apply traditional quoted equity methodologies to private equity. In efficient markets, managers can decide to be passive or active, depending on whether or

not they structure the portfolio to closely mimic the market. In inefficient markets such as private equity, managers have to be active, as they cannot track a benchmark. For illustration: although we can look up, for example, what a publicly quoted private equity fund-of-funds like the Private Equity Holding AG (see [www.peh.ch](http://www.peh.ch)) holds as funds, we cannot rebuild its portfolio. The funds are already closed or are even close to their liquidation. Even if we would try to mimic this portfolio's structure and characteristics by investing in funds with a comparable stage focus and quality, only in rare circumstances could stakes in funds of the same vintage years be acquired through secondary transactions. An active investment strategy implies, by definition, a change in the risk level. Usually there are two ways of controlling risk: non-quantitatively, by constraining manager to invest only in assets with same risk as the benchmark; and quantitatively, by adjusting the managers ex-post returns to reflect the market's price of risk. In theory, risk can be controlled for by using risk-adjusted return measures in both the benchmark and the fund.<sup>5</sup> For private equity, practically,<sup>6</sup> only the non-quantitative approach to controlling for risk can be used.

In the private equity market, it is common practice to use as a classical benchmark a vintage, geographic and fund type-specific benchmark, often referred to as "peer group cohort" (e.g. 1995 European buyout funds) and to express the results of a benchmarking in term of quartile relative to its benchmark. Figure 12.1 shows one example of an individual fund benchmarking. The fund starts as a fourth-quartile fund and moves after several quarters into the first-quartile area to peak with a 25% IRR. Then, it goes down into the second quartile and ends its life at the limit between the first and second quartiles. The quartile is a relative measure and does not reflect any qualitative assessment. A top performer in a dismal vintage year may barely return the invested money, while in some spectacular vintage years even fourth-quartile funds have returned double-digit returns.



**Figure 12.1** Individual fund benchmarking—quartile evolution since inception within the peer group

<sup>5</sup> Returns must be adjusted for risk in the way that the capital market prices risk. This is done on the basis of, for example, the Treynor ratio: portfolio's excess return over risk-free investments divided by its systematic risk as presented by its beta.

<sup>6</sup> Indeed, as described in Chapter 17, it is highly difficult in private equity to reliably measure the risk level.

### 12.2.3 Other relative benchmarks

In some cases, however, there are simply not enough funds to obtain a meaningful “peer group cohort”. Indeed, as the industry is private, the data providers mostly rely on voluntary participation and, as a result, certain markets are not effectively covered. In these cases, more general or alternative benchmarks can be used.

#### 12.2.3.1 Extended peer group

When a representative “peer group cohort” is not available, it is simplest to extend the peer universe to the most similar funds. For example, if the number of 1995 European early stage funds are not sufficient, the universe of the 1995 European VC funds can be used as an alternative benchmark or the universe of the 1994–1996 European early stage funds.<sup>7</sup> A wine analogy to this would be that if you want to assess a red Château Smith Haut Lafitte vintage 2000 and if you do not have any other Pessac-Leognan vintage 2000 wine to compare with, you could use other vintage 2000 wines from the nearest Bordeaux regions or a red Pessac-Leognan vintage 1999 or 2001<sup>8</sup> as substitutes, but obviously not Burgundy wines.

#### 12.2.3.2 Public market equivalent

Annual returns of quoted companies cannot be compared with private equity returns because they are prepared on a totally different basis. Quoted company returns are time-weighted yearly returns, while private equity returns are cash-weighted multi-period returns.

The goal of the public market equivalent methodology is to calculate a private equity equivalent public index return, which then can be compared. The methodology described in Cheung, Kapoor & Howley (2003) is based on the estimation of a public market equivalent terminal value, which substitutes the NAV in the interim IRR calculation. This terminal value is constructed by buying and selling the index using the fund’s cash flow schedule.<sup>9</sup> Once estimated, the NAV is replaced by this terminal value and the private equity equivalent public index return is calculated.

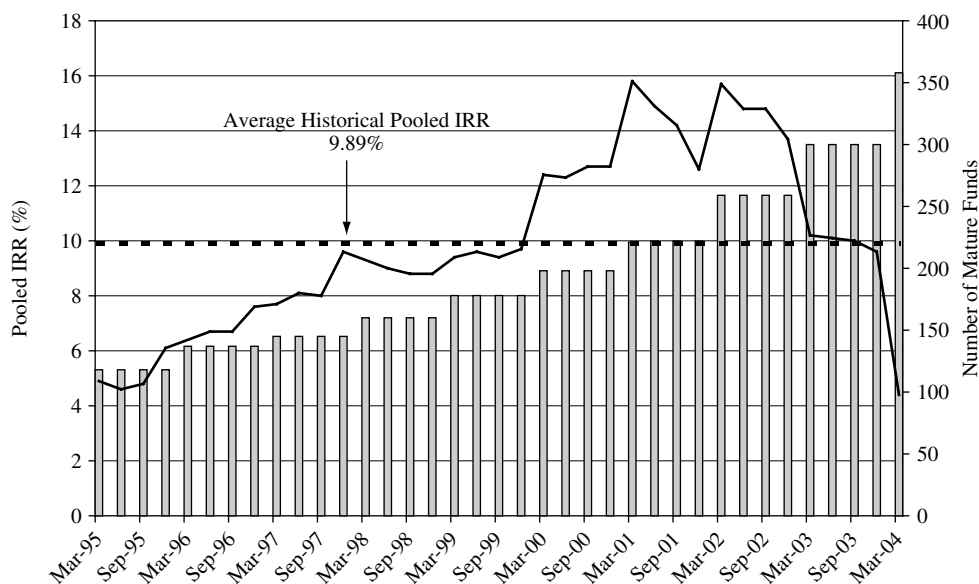
### 12.2.4 Absolute benchmarks

Private equity is often perceived as an absolute return asset class. Therefore, it is meaningful to use absolute return targets to evaluate performance. The first and most “simple” one is to compare the fund performance against the private equity investment programme target rate of return. Until recently, it was not uncommon to have target rates of return of 30% or even more. We do not believe such high return targets are meaningful. These were temporary and unsustainable levels. Another often-used absolute benchmark is a target expressed as a premium over public equity, e.g. 300–500 basis points over public equity. This benchmark

<sup>7</sup> Indeed, what happens during the night of 31 December that makes a December 1995 fund so different from a January 1996 fund?

<sup>8</sup> As with wines, the vintage year may be more important differentiator than for VC funds, which for two consecutive vintage years have on average 8 common years in their existence.

<sup>9</sup> The fact that the fund’s cash flow schedule is used explains why only the terminal value has to be changed for the calculation of the public market equivalent IRR.



**Figure 12.2** Mature European VC funds—pooled IRR

Source: Thomson Venture Economics (VentureXpert database).

is hybrid, being both a relative (public index)<sup>10</sup> and an absolute one (premium). Its use is justified by the fact that often the private equity allocation is obtained to the detriment of public equity, which is thus perceived as an opportunity cost.

Finally, the performance can be measured against the absolute historical returns of the historical peer universe, i.e. the “peer group cohort” for all the vintage years or the mature ones (see Figure 12.2). Note how comparatively unstable the statistics are.

## 12.3 PORTFOLIO OF FUNDS

### 12.3.1 Performance measures

As a portfolio is an aggregation of funds, its performance measures are simply the aggregation of those used for the funds (IRR, TVPI, DPI or RVPI), according to one of the following methods:

- *Average.* The arithmetic mean of the private equity funds’ performance measures.
- *Median.* The value appearing half-way in a table ranking funds’ performance measures.
- *Commitment weighted.* The commitment-weighted average of the funds’ performance measures.
- *Pooled.* Portfolio performance obtained by combining all individual funds cash flows and residual values together as if they were from one single fund.

<sup>10</sup> As explained in the discount rate chapter, private equity funds are most likely correlated with public equity. Assuming this is true, a public equity benchmark will then be a relative benchmark.

The pooled measure is giving the “true” return of the portfolio. However, for practical reasons, it may make sense also to use the others.

### 12.3.2 Benchmarks

As the performance of a portfolio is the aggregation of the individual funds’ performances, the benchmarking of a portfolio is simply the extension of the benchmarking of an individual fund. In doing so, it is important to use the same aggregation method for both the portfolio and the benchmark. Below, we present as examples two different approaches.

#### 12.3.2.1 Commitment weighted benchmark

The benchmark is constructed as the commitment-weighted average of each fund’s benchmark, i.e. the “peer group cohorts” (vintage, geographic and fund type-specific):

$$PB = \sum_{i=1}^n C_i^* FB_i$$

where  $PB$  is the portfolio benchmark,  $C_i$  is the commitment to the fund  $i$ ,  $n$  is the number of funds in portfolio and  $FB_i$  is the benchmark of fund  $i$ . The portfolio performance measure that has to be compared against the benchmark is obviously the commitment-weighted portfolio performance.

#### 12.3.2.2 Monte Carlo simulation

The Monte Carlo simulation<sup>11</sup> technique is used to generate portfolios similar to the one to be benchmarked. This is done by drawing at each simulation run the same number of funds as in the portfolio out of all the relevant “peer group cohorts” weighted by the commitment sizes of the funds in portfolio. For example, for a portfolio composed of eight early-stage funds and five later-stage funds, the simulation will be drawn for each run, eight funds out of the early-stage cohort and five out of later-stage cohort. After weighting the performance of each fund drawn by the relevant commitment size, a portfolio performance is obtained. This is repeated many times so that a distribution can be created, which is then used to benchmark the portfolio.

The results obtained from this approach should be taken with care. By construction (random pick) it is implicitly assumed that the fund manager has access to the entire population of the peer group cohorts, which in reality is not the case. Indeed, for various reasons some funds may not appear on a fund manager’s radar screen, or guidelines set by investors or mandators impose restrictions on the fund manager.

<sup>11</sup> A description of a Monte Carlo simulation can be found in Weidig & Mathonet (2004).





## A Prototype Internal Grading System

In this chapter, we present a framework for a model-based approach to determining the value and the risk of private equity funds. Due to the private nature and short history of the private equity market, there is a lack of data, which restricts the use of advanced modelling and rating techniques. Investment in private equity funds, being associated with a series of valuation problems and a bottom-up technique, as discussed in Chapter 11, is occasionally difficult to apply. As an alternative we have developed a top-down approach based on general considerations and experience and not primarily on mathematical modelling. Instead of trying to value numerous portfolio companies individually, we draw parallels between funds with a similar investment focus and base valuations on comparisons. While technologies and sectors are continuously changing, fund structures, managers and strategies are far more comparable. This makes their features more predictable than those of the portfolios they invest in, and forms the basis of our valuation technique for venture capital funds. This approach is applicable for private equity funds in general, but for later-stage funds there may be more appropriate approaches that, however, cannot be used—or only with high effort or under significant restrictions—for VC funds. In this chapter we:

- Discuss the existing approaches for grading private equity funds and their limitations.
- Propose an internal grading system that allows investors to assess private equity funds systematically.

Our grading is a structured review that aims to rank a fund against a peer group. Interim valuations have to be seen as milestones and need interpretation by experienced investors.

### 13.1 GRADING OF PRIVATE EQUITY FUNDS

Several papers, such as those put forward by the Basel Committee on Banking Supervision or by the International Swaps and Derivatives Association (ISDA),<sup>1</sup> suggest that private equity require techniques closer to credit appraisal. The traditional approach to assess credit risk is a rating system. The rating of borrowers is a widespread practice in capital markets. It is meant to summarise the quality of a debtor and, in particular, to inform the market about repayment prospects. While external ratings by agencies are well established, internal ratings by commercial banks are a more recent development. All credit rating approaches are based on a combination of quantitative and qualitative components. The more limited the quantitative data, the more the rating will have to depend on the qualitative assessments. So far, little information on private equity fund “rating” is published.

---

<sup>1</sup> See International Swaps and Derivatives Association (2001): “. . . Some traded assets with little or low liquidity (e.g. private equity) may require risk rather [sic] analysis closer to that which accompanies assessment of bankruptcy or default risk rather than a market risk paradigm.”

In this discussion, we will be using the terms “rating”, “grading”, “scoring” and “ranking”. In publications on investment management, these terms are often used somewhat interchangeably, which could make this subject highly confusing. The term “rating” is typically used in the context of credit risk models and is associated with default probabilities of loans or bonds. While ratings are also occasionally mentioned in the context of private equity funds, funds do not “default” in a sense of a credit. We suggest an assessment based on comparisons. For expressing this comparison in a standardised way, we propose to use the term “grading” to avoid misunderstandings. Like credit decisions for small lending exposures, our grading is also based on techniques such as “scorings” and “rankings”.

### 13.2 THE NAV IS NOT ENOUGH

The NAV alone often cannot give the “true” economic value of a private equity fund because it is not equal to the present value of the fund’s future cash flows. The future cash flows depend not only on the NAV but also the use of the undrawn commitments, the future expenses and a qualitative judgement—how good is the fund manager in selecting good investments and appraising their value?

Assume that you are asked to give an opinion on a VC fund. So far this fund has generated an interim return of  $-20\%$ . Is this a complete disaster? Not necessarily. The fund is still quite young—say, 3 years old—and it is rather typical that returns at this stage are negative. Until now investors have only paid into the fund, it hasn’t repaid anything so far and, moreover, some of its investments have already been written off. In short, the fund is currently in the “valley of tears” of the famous “J-curve”. A better way of looking at it would be to compare or benchmark this fund’s interim returns with the interim returns of a peer group, i.e. funds in the same “age group”. Based on such statistics, the fund doesn’t look too bad, somewhat in the middle, but the range of possible values is still so broad that it leaves one none the wiser.

Some experts may argue that the J-curve is a typical excuse of bad performers, and that they have seen 3 year-old funds with positive returns. A counter-argument is the economic environment. Clearly during the boom years of the last dot-com bubble a VC fund with negative returns in its third year was a lemon. Therefore, we may be comparing apples with oranges. As an analogy, if one would clock the time in a Formula 1 race after round 10 and compare it with the time after round 10 on the same circuit last year, it could be very different. A low speed now does not necessarily mean that the driver is not competitive, e.g. if the race now is during a downpour, while last year the racing day enjoyed perfect weather conditions (so, to assess Juan Pablo’s chances in this race, we need to take a look at how, for example, Michael is currently doing. He is behind, as he is just having a pit-stop).

Coming back to private equity funds, the more meaningful basis for comparison would be funds that launched their operation at the same time and were exposed to the same economic conditions: the peer group of the so-called “vintage year cohort”. Indeed, the previously mentioned private equity information providers organise their data based on vintage years. Let’s take another look at how the  $-20\%$  compares with the relevant peer group. According to the statistics, our fund is a laggard. While not the worst, it appears to be below average, reporting a third-quartile return. So let’s act and quickly get out of it (how may be a different matter). Not so fast, there are still some other issues around these interim return figures. The most important one is, that the interim return is derived from some real cash flows observed

so far and the fund's latest valuation, expressed as the NAV. Unfortunately, as we have already discussed, the NAV is a highly unreliable figure.

For example, write-offs, which negatively affect the NAV, are not necessarily negative signals. Indeed, good managers cannot shy away from "exiting" investments early that, although not outright failures, show after a few months that they are unlikely to meet the industry typical return targets in the double-digit return area. This is to preserve valuable resources—liquidity and management—for the "stars" in the portfolio and, especially when it is early days, for potentially better investments. One might, again, be mixing apples with oranges and compare a fund with a professional management and conservative valuation methods against funds that avoid necessary write-offs or that are unrealistically optimistic about their investments.

Therefore, to form a reliable assessment of a fund's relative performance, we have to work around the information deficiencies of this private and opaque market and need to take into account a whole series of factors, with importance and weight in the assessment changing over time.<sup>2</sup> Can the fund team pick the right investments, create value, do profitable exits, etc? In short, as in Formula 1 where the driver clearly matters, the hard facts alone leave many questions unanswered. Certainly "tactics" also have an impact (immediately after Michael's last pit stop, his car was heavier and slower than the field, but now he is picking up speed, and he does not have to return to the box anymore—poor prospects for the rest of the field!).

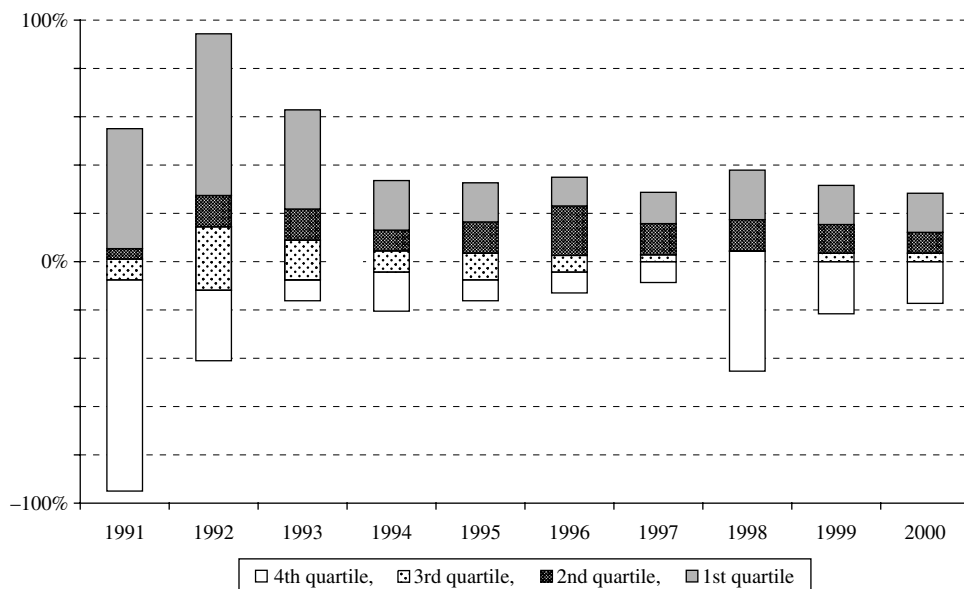
The starting point of the discussion above was the interim return mainly driven by a fund's last reported NAV. We argue that there are many factors to take into consideration when appraising a fund, and that the NAV alone may—depending on a fund's stage in its life cycle—have very limited explanatory power. We need to form a judgement on how well the fund will do compared to its peers. If faced with a fund that, for example, in its second year shows a clearly negative performance but that is, compared with its peers, above average, we want to answer the question, how well do above-average funds typically perform over their full lifetimes? Figure 13.1 puts this into perspective.

The 1991 vintage year of European private equity funds was raised under the difficult circumstances of a recession and the shadow of the first Gulf War. Nevertheless, even substandard funds were eventually able to return more than the invested capital to their limited partners. As exits fell into the bubble period, this example can, of course, not be taken as representative. However, it demonstrates that funds can only be assessed in a meaningful manner by taking a "buy-and-hold" perspective and looking at the expected value at the end of an investment horizon. Although even institutional quality funds remain risky investments, a diversified portfolio of private equity funds has a much-reduced deviation of the terminal wealth.<sup>3</sup>

For a long-term asset like private equity funds there are clearly limits to the precision of valuations and forecasts. A relative positioning vs. a peer group, however, is a valuable input, not only for the management of a portfolio of funds but also for the modelling of its risks. The thought process sketched out above forms the basis for a systematic grading system for ranking a fund within its peer group. As we further explain in Chapter 16, such a ranking can subsequently be translated into a valuation that reflects economic realities of a fund better than the "naked" NAV figures.

<sup>2</sup> See Diem (2002).

<sup>3</sup> See Weidig & Mathonet (2004).



**Figure 13.1** Quartile development over time—EU private equity funds 1991 vintage year  
 Source: Thomson Venture Economics (VentureXpert database).

### 13.3 EXISTING APPROACHES

In this section, we review approaches to private equity fund assessment currently in use. For this purpose we differentiate between assessments done by independent external parties and techniques for fund evaluation used internally by investors.

#### 13.3.1 Fund rating by external agencies

Confusingly, in the context of mutual funds the usage of the terminology “rating” is the norm. Ratings primarily for mutual funds are conducted by independent agencies like Morningstar, Lipper or FERI.<sup>4</sup> Therefore, in this section we discuss only “ratings” for funds. In the context of the remaining discussion, we will exclusively use the terminology “grading” for private equity funds. According to the *Feri Trust Funds Guide 2002*, “fund ‘rating’ is a standardised valuation with a forward-looking prognosis”.<sup>5</sup> Private equity funds, however, are typically not covered by such external agencies. The concept of a rating assigned by an independent agency rating is difficult to apply to private equity.

##### 13.3.1.1 Fiduciary rating

Fiduciary rating measures the risk of investors who entrust their money to third-party organisations. Fiduciary risk is the risk of breaching the investor’s trust by failing to perform

<sup>4</sup> FERI stands for Financial and Economic Research International.

<sup>5</sup> Mutual funds are “rated” by agencies like Morningstar (minimum 5 years of fund history, 20 comparable funds), S&P (minimum 3 years of fund history, sufficient number of comparable funds) or Lipper (minimum 3 years of fund history) do funds ranking (publicly quoted investments).

their contractual expectations. According to RCP & Partners, it is “*a methodology for assessing, rating and monitoring asset management organisations through application of standardised process*”.

It focuses on the assessment of the management company and takes criteria like the quality of investment process, the financial strength, the quality of risk management, the avoidance or mitigation of conflicts of interest, the quality of controlling, customer service, or management strategy into consideration.

A fiduciary rating has the advantage of not requiring a long investment history and therefore could overcome a main obstacle to private equity investing. But there is no direct link between fiduciary rating and future performance. A good fiduciary rating is not necessarily indicative for good investment performance. RCP & Partners use the same scale as Standard & Poor’s, which could cause confusion, as the RCP & Partners scale is not based on the same investment risk model.

Fiduciary rating might be difficult to apply in a private industry, as it relies on voluntary participation. High-quality private equity funds may not even be interested, as they have an established investor base. For alternative assets, we believe that a fiduciary rating cannot replace the due diligence but should rather be seen as a complement, especially suited for the monitoring phase and possibly as a standard input for a fund’s qualitative assessment.

### 13.3.1.2 Investment rating

Feri conducts an alternative asset rating for private equity funds: “*The outcomes of fund managers due diligence are benchmarked. The quantitative aspects of a fund are then compensated by qualitative aspects and both result in a fund rating from A to E, where A is the best rating*”. Feri private equity fund selection criteria<sup>6</sup> are management<sup>7</sup> (60%), economics<sup>8</sup> (32.5%) and customer service<sup>9</sup> (7.5%). To our knowledge this rating is for Feri’s clients and is not made available to the public.<sup>10</sup>

### 13.3.1.3 Limitations of an assessment by external agencies

We see the following main issues that make the concept of rating by external agencies for private equity funds problematic:

- If an external agency cannot base its opinion on a sufficient number of objective criteria, it will be difficult to defend an assigned “rating”. Venture capital is an appraised and speculative asset class. Therefore, the assessment of a fund will predominantly be based on qualitative factors and this could be highly subjective.
- A rating usually does not imply any recommendation by an agency. As an external rating for a private equity fund would only be relevant pre-investment and there is no efficient risk-adjusted pricing, it implicitly forms an investment recommendation. Post-investment, the investor has access to far better in-depth information on the private equity fund than any rating agency.

<sup>6</sup> See Söhnholz (2002).

<sup>7</sup> Business concept, management experience, management resources, past performance, deal and exit generation, manager risk, management participation.

<sup>8</sup> Management fee, incentive fee, other costs, cash flow, fund risk.

<sup>9</sup> Tax and legal structure, customer relationship management.

<sup>10</sup> Comparable assessments for private equity funds are also provided, for example, by Mackewicz & Partner.

- There are too few potential investors as customers that would make an external rating service viable.<sup>11</sup> As this is an unregulated industry, only qualified and experienced investors can become limited partners, and they cannot invest without a proper due diligence.

Investors in private equity funds—existing and potential ones—cannot act upon external rating. Funds cannot always be invested in, and an investment in such funds is only possible at certain times: the fund-raising period, or only in exceptional cases a secondary transaction if a limited partner wants to exit prematurely.

### 13.3.2 Internal VC fund assessment approaches

#### 13.3.2.1 Due diligence

While it is always difficult to predict success, failure can often be detected at an early stage. In the unregulated alternative asset industry in general, an investor needs to carry out a pre-investment due diligence on a proposal. The private equity fund does not have any assets yet.<sup>12</sup> For this reason, the due diligence to a large degree is a judgement of the fund management skills.<sup>13</sup> The pre-investment due diligence attempts to filter out the potential top performers by rigorously eliminating less than “perfect” investment proposals. This does not necessarily lead to good investment decisions. If too strict criteria are applied, too many potentially good investment proposals can be filtered out. We will discuss due diligence in more detail in Chapter 14.

#### 13.3.2.2 Internal grading approaches

Some private equity investment programmes use grading-like assessments to manage their portfolios. An example is for such best practices the one used by CalPERS (see Table 13.1). “Too early to tell” does not mean that CalPERS has no opinion on a fund before they invest. The underlying assumption is that the investment is done in a fund that meets the declared return expectations. According to Braunschweig (2001), CalPERS expects for seed capital investments a 30% return on invested capital. CalPERS sets targets around 25%

**Table 13.1** Performance assessment for current portfolio

Exceeds expectations
As expected
Below expectations
Below expectations/with concern
Too early too tell

*Source:* CalPERS

<sup>11</sup> Mutual funds are more scalable in terms of number of investors and investment volume: interest for rating services like Morningstar and the mutual fund managers is higher and no due diligence is necessary, as it is a regulated industry. The private equity fund rating assigned by Feri should rather be seen as a standardised due diligence; its results are, to our knowledge, only made available to Feri customers.

<sup>12</sup> In the case of secondary transactions, however, the due diligence tends to focus on the portfolio of the VC fund’s investee companies.

<sup>13</sup> See Levine (2003): “*Identity of the managers is central to the success of any PE investment*”.

**Table 13.2** Fund performance assessment

Assessment scale	Description
A	Clear evidence of X%+ rate of return over the life of the fund
B	An immature fund managed by a strong venture capital team or a fund set to generate a return in the low to high teens range
C	An underlying portfolio which may generate a return in the high single figure to low teen range, or an unproven or less talented management team
D	A fund set to produce a single figure return or major concerns about the management team
E	A fund expected to produce a negative return or minimal positive return

for early- and late-stage venture capital. It expects a 20% return on buyout and later-stage investment, and sets a 15% return target for mezzanine capital.

Another example of a private equity fund assessment used internally by an industry player is shown in Table 13.2. Both approaches define static benchmarks for grades that, to some degree, take a specific market environment into consideration.<sup>14</sup> Raschle & Jaeggi (2004) refer to another approach based on probabilities and quartiling<sup>15</sup> (Table 13.3). Such fund assessments are mainly used for internal purposes and are only touched upon in few publications.<sup>16</sup> Based on discussions with industry practitioners, it appears that fund “grading” approaches—whether published or internal—are often “unpopular”.<sup>17</sup> One reason might be that a low rating would typically be interpreted as a failure of the initial investment selection method.

**Table 13.3** Fund performance assessment

Manager quality	Quality definition
Outstanding	50% probability of reaching top quartile
Solid	35% probability of reaching top quartile
Average	25% probability of reaching top quartile
Poor	Less than 20% probability of reaching top quartile
Unproven	Too young

Source: Adveq analysis 2002

<sup>14</sup> See Healy (2001): “Calpers may have gotten greedy after that ITV fund. The Silicon Valley fund’s 1998 portfolio was up 69.9% through the end of last year—yet was ranked ‘below expectations.’ A Thomas H. Lee fund of the same year (a buyout fund, vs. a start-up tech fund) had gained 19.2% by year-end and was seen to be performing ‘as expected’. . . . Still, over the long term, Calpers has been doing something right. As of March 31, its average annual return for 10 years of private equity investing was 17.5%. The Wilshire 2500 Index, a broad stock market benchmark, was up 13.9% in that period”

<sup>15</sup> The probability of making it into the first quartile is also time-dependent. A mature top-performing fund will most likely make it to the first quartile, while in its early years the same fund’s probability of reaching this objective will certainly be lower. Consequently, in the Adveq scale a fund would go through different stages, although the fund’s quality is essentially unchanged. That could make comparisons over several vintage years difficult.

<sup>16</sup> See e.g. Reinhard Hartl, Global Vision Private Equity Partners, in an interview with AltAssets, August 2003, or Helen Steers, Pantheon, in an interview with AltAssets, June 2003 (see www.altassets.com). Some rating agencies like Feri Trust (see Söhnholz, 2002) or RCP & (see Rating Capital Partners, 2002) apply their methodologies also to private equity funds. While their “ratings” signal the quality of a VC fund (typically with focus on quality of the investment team or organisation), their “ratings” do not appear to be linked to any return projections or default probabilities.

<sup>17</sup> See Healy (2001): “Even now, managers of venture funds and other private portfolios are talking about the posting, aghast that the numbers—good, bad, and ugly—are there for all to see. Said one private equity executive, ‘If you show up in the “below expectations” column, you’re done’”.



**Table 13.4** Comparison of fund assessment approaches

	Fiduciary rating	Investment rating	Due diligence	Internal grading
Initiated by	General partner	Limited partner	Limited partner	Limited partner
Pre-investment	Yes	Yes	Yes	Yes
Post-investment	Yes	?	No	Yes
Valuation	No	No	N/A (complies with list of criteria)	Yes

### 13.3.3 Comparison of approaches

Neither the due diligence results nor the external fiduciary rating typically form the basis for regular valuation reviews. Limited partners sometimes use an internal grading for the ongoing monitoring of their portfolio (Table 13.4).

To value private equity fund, we have to overcome a series of problems. As the investment is usually in a blind pool, any assessment has to rely—at least during the early years of the fund's life—to a high degree on qualitative criteria. The quantitative analysis is focusing on the financial strength and on the portfolio. But the relevance of the portfolio analysis follows the fund's life cycle: its importance is first increasing and then decreasing. Moreover, it is a challenge to value this portfolio and to compare it against that of other private equity funds.

In the private equity market, the main challenge is to obtain information about a blind pool without external source of verification and without systematically collected long-term data. Data and due diligence results are of limited quality, and it is a challenge to extract meaningful information to improve the investment decision and to help the portfolio management.

## 13.4 NEW APPROACH TO INTERNAL FUND-GRADING SYSTEM

Our internal grading system is based on a ranking within a peer group, i.e. putting funds in order of attractiveness. From this, you only know relative but not absolute merit (e.g. fund A appears better than fund B, but this does not necessarily mean you can expect an IRR of 30%).

### 13.4.1 Grading formalisation

In Krahnen & Weber (2000), a rating of a company in the context of credit risk is defined as the mapping of the expected probability of default into a discrete number of quality classes or rating categories. Formally, a rating system is a function:

$$R: \{\text{companies}\} \rightarrow \{\text{rating values}\}$$

As already mentioned, for private equity funds the concept of default is questionable.<sup>18</sup> For a long-term-oriented investor, the risk is rather to be seen as generating a return below a set

<sup>18</sup> See also Bushrod (2003c): "EVCA says: 'In the current draft of the New Basle Accord, the loss given default, which measure the proportion of the exposure that will be lost if a default occurs, for equities is set at 90%. However, an analysis of the business realities of 100 European liquidated private equity and venture capital funds (as at the end of 2002) demonstrates that, when in a situation of default, i.e. when a fund has not returned the full amount of capital to the investors, investors received on average 44% of their capital. In other words, the results of this analysis set the loss given default at around 56%, which is significantly lower than the 90% loss given default for equities set in the current draft". Here intuitively the two concepts are put together: a VC fund's performance below a threshold of 0% is seen as "default".

threshold.<sup>19</sup> Because of its specific life-cycle characteristics, a private equity fund is marked to a basket of comparable funds or peer group. The historical performance statistics of this basket forms the basis for the valuation. Interim IRRs (net to investors) reported in aggregate form, e.g. by Venture Economics, represent a mixture of growth in NAVs for unrealised investments and cash IRRs for realised investments; such peer group statistics are available for VC funds and also for later stage private equity funds (see Chapter 12).<sup>20</sup>

In principle, a private equity fund-grading system should fulfil the same requirements as a rating system.<sup>21</sup> The main difference between a rating, as defined by Krahnen & Weber (2000), and a grading for funds is that a grading system cannot be defined without a peer group.<sup>22</sup> Intuitively, limited partners focus on comparing interim performance results between funds; this cannot be ignored for a fund-grading concept.<sup>23</sup> The grading aims to determine the current rank of a fund compared with its peers, as defined in a benchmark expressed by quantiles.<sup>24</sup>

The funds of the same vintage year represent, in benchmark statistics form, the peer group.<sup>25</sup> We define a private equity fund-grading system as a function:

$$G: \{\text{Private equity fund, peer group}\} \rightarrow \{\text{grading values}\}$$

For the peer group it is assumed that quantiles are clearly defined. For the assignment of grades to a fund, an understanding of the benchmark calculation and composition is required.

### 13.4.2 Expected performance grades

The goals of the grading approach are to be relatively simple (as the lack of data precludes from using complex techniques) and intuitively easy to understand. It should allow classifying all funds into specific unambiguous classes where all members within the peer group universe share similar characteristics. Ex-post, after realisation of the fund, the grades can be confirmed

<sup>19</sup> Special cases of shortfall risk measures are the shortfall probability, the shortfall expectation and the shortfall variance. The approach has the advantage over conventional risk measures by distinguishing between upward and downward return fluctuations.

<sup>20</sup> Expected performance grades are defined based on a benchmark (representing the relevant private equity market segment) and the characteristics of the benchmark determine the risk profile of the VC fund portfolio. For a more in-depth modelling of the VC fund portfolio, various benchmarks (such as early-stage VC or later-stage buyouts) can capture the different long-term risk–return profile of such market segments. The sophistication of modelling is constrained by the availability of benchmark data and the degree of differentiation between the various benchmarks. The management of a multiple benchmark portfolio adds additional challenges that go beyond the scope of this chapter.

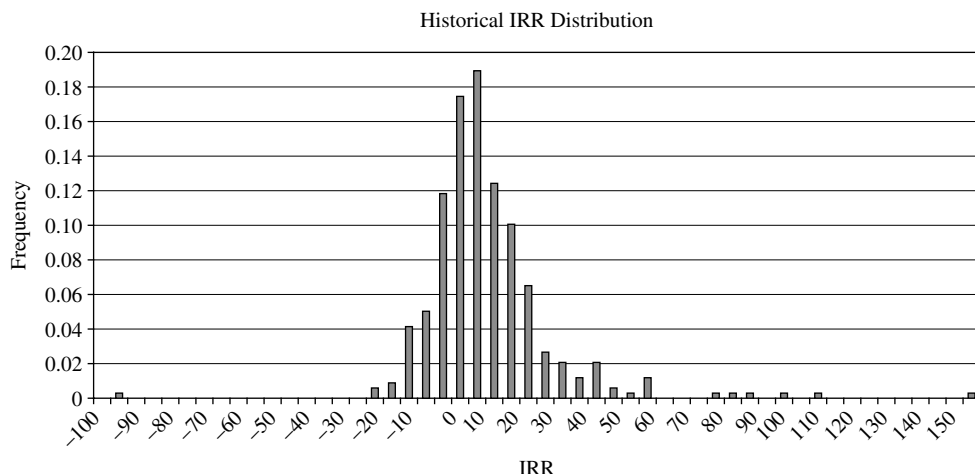
<sup>21</sup> Such as comprehensiveness, completeness, complexity, fineness and reliability (see Krahnen & Weber, 2000).

<sup>22</sup> A rating does not require a benchmark, as a company's default probability can be defined in isolation and independently from other companies.

<sup>23</sup> See Flag Venture Management (2002a): “Nonetheless, Flag seeks sound interim valuations in order to provide LPs with reporting that accurately reflects the current value of the portfolio at particular points for comparative purposes”; and Flag Venture Management (2002b): “As such, we would have public disclosure limited to realised return data on mature funds”.

<sup>24</sup> Note that the IRRs of the VC funds within the peer group are clearly defined and fixed ex-post only. During the lifetime of the VC funds of a peer group quantiles are based on interim IRRs; therefore the quantiles reported do not form a fixed yardstick. Only after all VC funds have matured do the quantiles not change any more and the definition of the grades is unambiguous. See also Cheung, Kapoor & Howley (2003): “The reason Standard & Poor's focuses on fully liquidated private equity interests is that since values in private equity are self-marked and there is no liquid market for interests in private equity, an ongoing self-marked value simply does not provide an objective variable to quantify private equity risk–return. Needless to mention that because of the illiquid nature of private equity, knowing the ‘true value’ of a portfolio at any time does not help address the likelihood of meeting cash flow needs of debt issued against it”.

<sup>25</sup> Such as provided by private equity information services as Venture Economics or Cambridge Associates. These statistics give the returns to the limited partners.



**Figure 13.2** EU VC funds—realised IRRs for the time period 1984–2000

Source: Thomson Venture Economics (VentureXpert database).

by comparing the final return figure against a defined published private equity benchmark (see Figure 13.2).

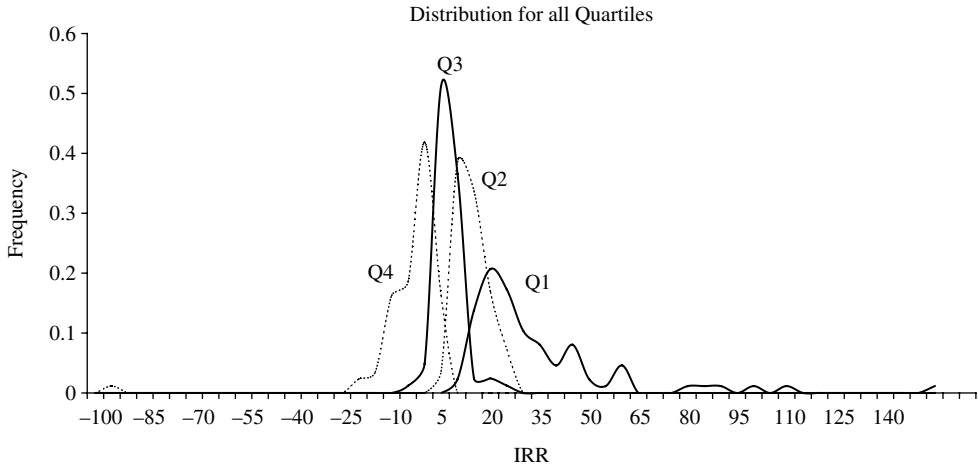
As the private equity industry obviously “thinks” in “top-quartile” funds,<sup>26</sup> the quartile statistics form the basis for an intuitively simple grading scale.<sup>27</sup> Normally, the industry participants define as peer group the funds with the same vintage year and the same stage focus. Another advantage of such an approach is that when funds are liquidated, the expected performance grades can be easily validated or “back-tested”. But due to scarcity of, and lack of reliability in, data on the private equity market, finer grades do not appear meaningful. As published private equity performance data are mainly based on quartiles, a grading by quartiles appears to be a reasonable trade-off. Figure 13.3 shows histograms by quartiles for realised IRRs.

Under the assumption that the ranking does not change in other words that the funds maintain their current quartile position within their peer group, their return would fall into the respective quartile of the benchmark. That leads to the definition of the expected performance grades shown in Table 13.5.

Expected performance grades are assigned based on the evaluation of both quantitative and qualitative criteria. The final grade reflects many attributes, but usually it is not calculated using a formal model that would show how to weight all these attributes in a normative way. In essence, the systems are based on general considerations and on experience, and not on mathematical modelling. They cannot be regarded as precise, and they also clearly rely on the judgement of the evaluators. Therefore, the expected performance grading

<sup>26</sup> See Timsit (2003): “The hurdle lies in the huge differences in performance of fund managers operating in this class. While top performers consistently deliver over 20% net returns, some other funds are crawling under the 5% threshold”.

<sup>27</sup> In fact, we know about another major institution with a significant private equity programme that uses an approach close to ours; according to the manager, the peer-group quartile-grading is “so simple that everybody understands it immediately”. Other granularities could be used, such as deciles. However, given the high uncertainty, it is questionable whether this is meaningful for venture capital.



**Figure 13.3** EU VC funds—historical IRR distribution by quartiles for the time period 1984–2000  
Source: Thomson Venture Economics (VentureXpert database).

**Table 13.5** Definition of expected performance grades

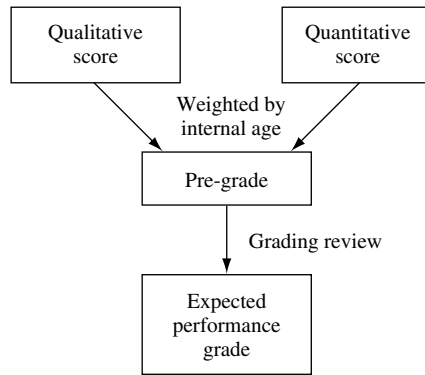
Expected performance grade	Definition
A	At the time of the grading, the fund's rank is expected to fall into the first quartile of the peer group on realisation
B	At the time of the grading, the fund's rank is expected to fall into the second quartile of the peer group on realisation
C	At the time of the grading, the fund's rank is expected to fall into the third quartile of the peer group on realisation
D	At the time of the grading, the fund's rank is expected to fall into the fourth quartile of the peer group on realisation

system (Figure 13.4) is a relative ranking<sup>28</sup> of funds within a specific peer group<sup>29</sup> that incorporates:

- Quantitative scoring.
- Qualitative scoring.
- Method to combine the two evaluations: the “internal” age.
- A review and, if necessary, an adjustment of the grade.

<sup>28</sup> See Ender & Jaeggi (2003): “Erfolgreiche Manager haben also einen Vorteil im Vergleich zu ihren Konkurrenten, der ihnen auch für die Zukunft eine Outperformance verspricht. Damit wird es möglich, relative Performance-Erwartungen an konkrete Fund-Manager zu knüpfen, auch wenn die erwähnten Statistiken erst vorliegen, nachdem die Fonds weitgehend realisiert sind ... Entscheidend für die Private-Equity-Allokation ist deshalb, dass ein Plan-Portfolio mit den Namen der Fund-Manager, in die investiert werden soll (einschliesslich der geplanten bzw. möglichen Investitionssumme), erstellt wird. Diese Plan-Zuteilung muss mit einer ausdrücklichen relativen Performance-Erwartung einhergehen”.

<sup>29</sup> See Flag Venture Management (2002b): “Measuring funds against one another before they mature is similarly fraught with pitfalls. Early stage, late stage, communication, healthcare ... each combination of strategies will generate different interim valuation patterns, resulting in misleading comparisons. Funds comparing poorly in the early going can end up on top, and vice versa”.

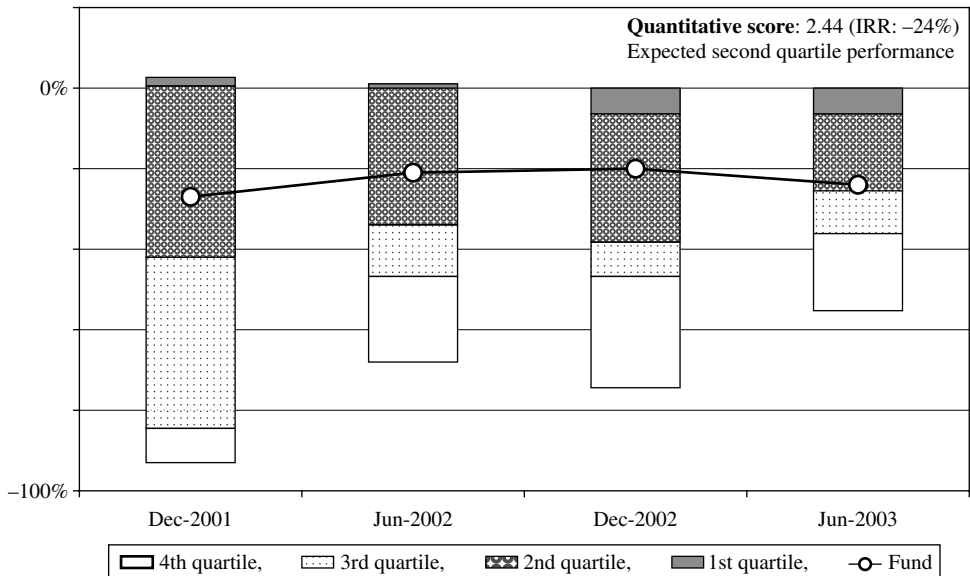


**Figure 13.4** Expected performance grading system

13.4.2.1 Quantitative scoring

The expected performance grading methodology aims to form a judgement on a fund's final IRR. For this purpose, interim IRRs can be used as estimators of the final performance, such as interim time keeping in a Formula 1 race. Over the fund's lifetime, its interim IRRs can be compared against the interim IRRs of its peer group, i.e. the private equity funds with the same vintage year and the same stage focus.

As in Formula 1 racing, interim positions are fickle—tyres burst and engines go sour. Schäli, Frei & Studer (2002) report that 14% of VC funds with interim IRR in the first quartile after year 1 end in the first quartile on maturity, and that 50% of funds with interim IRR in the first quartile after year 4 end in the first quartile on maturity. Obviously, young funds



**Figure 13.5** Quantitative score based on benchmark comparison

that value conservatively move quite late into the first quartile, and the best performers often show only at the end of the fund's lifetime. Therefore, the interim top-quartile composition will change continuously—which underlines the importance of qualitative scoring.

It is part of the ongoing monitoring to continuously review and correct the ranking of a fund within its peer group population and to update the associated expected performance grade accordingly. The peer group IRRs can, for example, be found within the Venture Economics database, which provides benchmark statistics, albeit only with broad index differentiation, such as buyout and venture capital.

To be able to combine both the quantitative and the qualitative assessment into our grading scale, we need to translate the comparison against the benchmark (see previous chapter on benchmarking) into a quantitative score: the fund's relative position within its benchmark is converted as a linear combination between the quartile limits, with the maximum being equal to 1, the minimum to 4, the median to 2.5, the top quartile minimum to 1.75 and, finally, the lower quartile maximum to 3.25. For example, the quantitative score of the fund illustrated in Figure 13.4, with an interim IRR of  $-24\%$ , knowing that the limits for the second quartile are  $-6.4\%$  and  $-25.5\%$ , is calculated based on the “quartiling”, as follows:

$$1.75 + 0.75 * \left( \frac{-24\% - (-6.4\%)}{-25.5\% - (-6.4\%)} \right) = 1.75 + 0.75 * \left( \frac{-18\%}{-19.1} \right) = 1.75 + 0.75 * 0.92 = 2.44$$

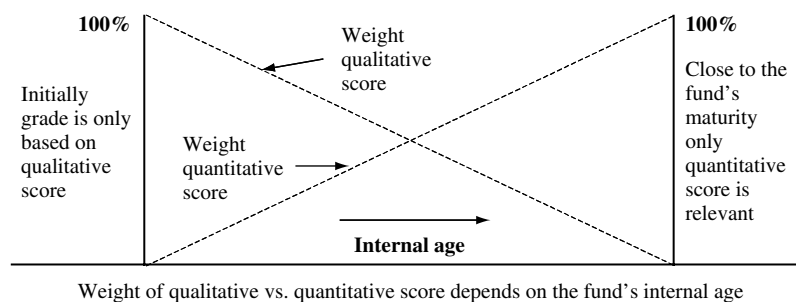
Where the fund is not part of the benchmark population, its interim IRR could either be higher than the benchmark's maximum or lower than its maximum return. In the former case the fund's quantitative score is set as 1, and in the latter case it is set as 4 (see also Appendix 13A).

#### 13.4.2.2 Qualitative scoring

While it is definitively worth performing a quantitative scoring based on interim IRRs, it is obviously not a perfect estimator of the final performance, especially during the fund's first years. There are numerous other attributes that should be taken into account in order to evaluate the expected final performance. The method proposed is the so-called “point-awarding system” or scoring system. It is an approach that generally rests on qualitative attributes. In this context, the qualitative evaluation has to be understood as the analysis of all relevant fund attributes that are not related to hard figures. Nevertheless, a qualitative analysis will also need to consider some quantitative data. This system offers the advantages that the attributes are consistently covered and that it allows one to standardise the process, leading to more robust results, to ensure its completeness and to compare between investment proposals. The scoring system, as described in Chapter 15, has been constructed so that it can be combined with the quantitative score. Therefore, the qualitative score is a numerical value between 1 and 4, with the maximum being equal to 1, the minimum to 4, the median to 2.5, the top quartile minimum to 1.75 and finally the lower quartile maximum to 3.25.

#### 13.4.2.3 Combining quantitative and qualitative scores

Increasingly over the fund's lifetime, quantitative information becomes available that in the early years complements, and close to maturity fully replaces, the qualitative judgement. The method used to combine the qualitative and quantitative scores is based on a parameter that



**Figure 13.6** Combining quantitative and qualitative scores

summarises the predictive power of each of them. For the two extreme situations, the start and the end of a fund's life, it is obvious that at the beginning only the qualitative estimator has predictive power and the quantitative estimates has none, while at the end of the fund's life it is the opposite, with the fully known IRR and the qualitative assessment irrelevant. Therefore, a simple way to combine the two estimators is to use the age of the fund.

As for human beings, calendar age can sometimes significantly deviate from physical or biological age. Therefore, it is worth looking at other parameters that will better reflect the "internal" age of the private equity fund.<sup>30</sup> To do so, one has to analyse the composition of:

- *The final IRR*: final cash outflows (all drawdowns) and final cash inflows (all distributions).
- *The interim IRR*: interim cash outflows (all drawdowns up to the interim date), interim cash inflows (all distributions up to the interim date) and the NAV (used as terminal cash flow for the calculation of the interim IRR).

Intuitively, the higher the cash components are (or the lower the NAV), the more unbiased is the interim IRR as a predictor for the fund's final return.

The cash outflows are relatively simple to model, as they are normally clearly defined in the limited partnership agreement with a pre-agreed maximum and should thus evolve between 0 up to the fund size. However, to be fully accurate, it should be taken into account that the total fund size is not always fully drawn down and that some allow to draw down more than the fund size (e.g. reinvestment of the management fees). As formula, using a scale of 0–1, the "drawdown age" can be written as:

$$0 \leq \frac{\sum_{t=0}^i DD_t}{\sum_{t=0}^L DD_t} \leq 1$$

where  $DD_t$  is the drawdown during the period  $t - 1$  to  $t$ ,  $i$  is the interim time and  $L$  is the funds lifetime. The cash inflows are more difficult to model, as their total will only be known at the end of the fund's life. One approach would consist in estimating based on general market statistics (average total repayments) or any other estimator of total repayment. For

<sup>30</sup> See Meyer & Weidig (2003).

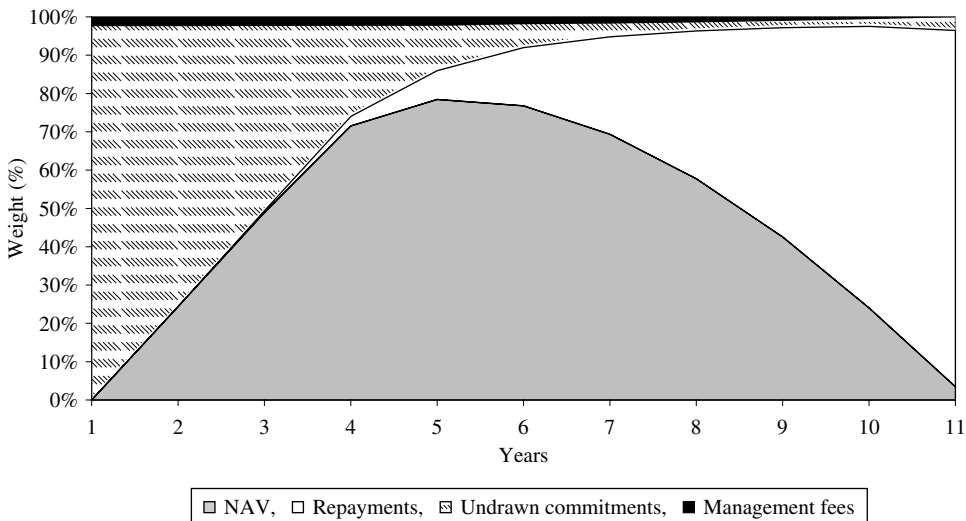
simplicity, the third component of the interim IRR, the NAV plus the undrawn, can be used as a proxy. As formula, using a scale of 0–1, the “repayment age” can be written as:

$$0 \leq \frac{\sum_{t=0}^i RP_t}{\sum_{t=0}^i RP_t + NAV_t + Undrawn_t} \leq 1,$$

where  $RP_t$  is the repayment during the period  $t - 1$  to  $t$ . Then, by combining what we have called the “drawdown age” and the “repayment age”, we get an estimator of the fund’s internal age. Finally, to make it easier to use, it is divided by 2 in order to have the internal age ranging from 0 to 1.

A similar approach can be taken when evaluating the relevance of the NAV for the assessment of private equity funds. Half-way through the fund’s lifetime<sup>31</sup> the explanatory power regarding the fund’s terminal wealth of the NAV reaches its peak (see Figure 13.6). There are still some undrawn commitments, and already some realisations have occurred that have been returned to the investors. But the NAV never gives the full picture, especially as it is based on the fund manager’s assessment and is still years away from an exit. The valuation is still highly unreliable. Approaching the end of the fund’s lifetime, the NAV becomes more and more reliable, but—like the qualitative scoring—also increasingly irrelevant, as the fund’s performance is nearly fully explained by the realised cash flows.

The interim IRR does not capture the undrawn commitments. Figure 13.7 demonstrates that during the early years of a private equity fund’s lifetime the significance of the interim



**Figure 13.7** NAV—Change of weight

<sup>31</sup> Typically 10 + 2 years contractually, but can be shorted depending on the economic environment.



IRR is negligible. Due to the management fees, during the first years this figure will be nearly always negative, although early profitable exits can lead to spectacular high-percentage returns, even if the absolute amounts are low compared to the overall commitments. In short, initially interim IRRs leave a huge part of the picture out.

#### 13.4.2.4 Review and adjustments

Scores discussed previously have been based on rankings. For the assessment of a fund's portfolio quality, rankings do not always work. As an example, diversification taken to one or the other extreme could have a negative impact on the fund's expected performance grade.

Whether a fund's portfolio is under- or over-diversified compared to the peer group cannot be answered mechanically. Comparable considerations could be applied to the assessment of a fund's liquidity: a fully invested private equity fund could face—depending on the overall economic environment—significant problems in the follow-on financing and may therefore be forced to write off potentially promising investments. On the other hand, a fund keeping too much liquidity in reserve does not really put commitments to work and may prove disappointing to its investors. One approach to assessing such trade-offs is to assign “flags” in cases where a deviation from the peer-group is likely to result in problems. If the sum of these “flags” as crisis predictors reaches a defined threshold, the fund should be downgraded. For this purpose, a grading review policy should be put in place. It should, for example, incorporate the operational status grades (see Chapter 18) or insights gained out of the cross-checking of portfolio company valuations between various funds.

Any process that relies on subjective judgement can fall prey to decision bias. Both formal and informal decision analysis techniques can be used to reduce biases. An informal means of reducing decision bias is to establish an expert panel that is responsible for approving the evaluating and scoring of the activities. Additionally, questionnaires, structured interviews and discussions with co-investors, other industry contacts, peer group comparisons, and sector research can improve the quality of the grading process. The process can be performed in various stages, so that indepth analysis is applied to the more promising proposals pre-investment or the critical cases during monitoring.

### 13.5 SUMMARY—NAV- AND GRADING-BASED VALUATION

Despite the problems associated with a bottom-up valuation approach, the NAV is not ignored entirely in the grading based valuation approach. It is considered as one of various inputs into a grading technique that also takes qualitative criteria into consideration. The NAV is mainly an input to derive a quantitative score and will therefore be given a different weight depending on the fund's internal age. To do a quantitative scoring, it is not necessary that NAVs be reported under fair value accounting rules. They just need to be comparable within the peer group. Therefore the economic value of a fund can even be determined when general partners report under conservative valuation guidelines.

Table 13.6 summarises the characteristics of the traditional private equity fund valuation technique that views the limited partnership's share value as the percentage of the NAV or the grading based marking-to-model:

**Table 13.6** Comparison of valuation approaches for private equity funds

Fund value as percentage of NAV	Fund value derived from grading-based model
Requires existence of investee companies before fund valuation	Possible upfront
NAV is the only basis for valuation	Takes NAV and other criteria into account
Mainly quantitative (albeit with NAV review)	Quantitative and qualitative
Does not consider undrawn commitments	Based on overall commitments (drawn, undrawn, past and future management fees and carried interest)
Does not reflect fund structure	Reflects fund structure
Ignores VC fund manager's value added	Reflects VC fund manager's value added
Break-up assumption	Buy-and-hold assumption
Transaction price	Economic value (NPV)
Cannot differentiate whether permanent or temporary diminution	Can differentiate expected and unexpected loss or permanent diminution (for a given confidence level)

## 13.6 CONCLUSION

Often scoring methods can generate significant variations in their outcome for small changes in their input parameters. Therefore, the methodology chosen for determining the grades needs to be assessed and approved independently and its consistent application has to be regularly reviewed. A systematic decision approach cannot remove the subjectivity from the assessment, since different individuals—facing the same situation and having the same information—can arrive at different opinions. This effect and the lack of a guarantee of satisfactory results should not be construed as a failing of the formal assessment method. The value gained by implementing a systematic approach is in the clarification of the logic behind the assessment and the identification of the real issues that can hamper consensus and decision making.

## APPENDIX 13A

The  $IRR_{PEF}$  is defined as the realised internal rate of return (IRR)<sup>32</sup> at end of a private equity fund's lifetime. Benchmark statistics give returns to limited partners. Rather than attempting to forecast an IRR figure, the grading system aims to assess a fund's relative position within its benchmark, expressed by grading values, or short grades, defined as categories  $\{g_1, \dots, g_n\}$ . A grade  $g_i$  is better than a grade  $g_j$ ,  $\forall i \neq j$ :

$$g_i \succ g_j$$

The grades can be ranked:

$$g_h \succ g_i \succ g_j \succ g_k$$

Grade  $g_i$  is identical to grade  $g_j$ :

$$g_i \sim g_j$$

<sup>32</sup> Bounded by  $-100\%$  from below.

The grading system maps the fund on expected performance quantiles. These performance quantiles have to be well defined. For the benchmark,  $n$  quantile ranges are reported,<sup>33</sup> with  $q_1$  the IRR of the highest- and  $IRR_{min}$  the IRR of the lowest-performing fund represented in the benchmark.

However, as the private equity market is opaque, the portfolio of funds to be graded is not always a full sub-set of the benchmark universe. In the extreme, the limited partner might even have invested in more funds within a vintage year than represented in the benchmark. This is not necessarily an obstacle to the methodology, as the benchmark only forms the yardstick for comparisons, provided that the funds to be graded have the same statistical characteristics as the benchmark.

As a private equity fund (PEF) funds to be graded may not always form part of the benchmark,<sup>34</sup> the following situation cannot be excluded:

$$\exists PEF: IRR_{PEF} < IRR_{min} \vee IRR_{PEF} > q_1$$

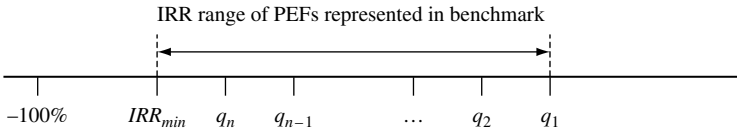


Figure 13.8 IRR statistics in benchmark

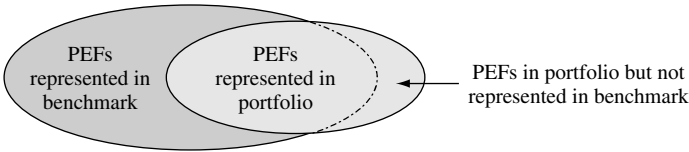


Figure 13.9 Private equity funds captured by the benchmark

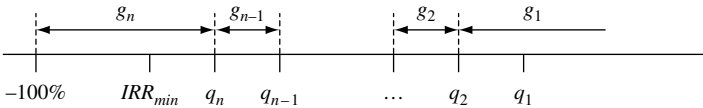


Figure 13.10 Extending IRR statistics

<sup>33</sup> For quantiles, definitions can deviate; therefore the quantile ranges as reported by the benchmark provider are taken. Quantile definitions become problematic for small amounts of data in a set. The grading is undefined if no quantile ranges are reported for the benchmark. The fewer data a set contains, the bigger these problems become. With a maturing private equity industry and an increasing number of VC funds represented in a benchmark, this problem will cease to be of relevance.

<sup>34</sup> However, benchmark data can also be “enriched” with in-house information.

For this reason, the highest and the lowest quantile need to be extended<sup>35</sup> to allow unambiguous mapping of a funds  $IRR_{PEF}$  onto a grade  $g_i$ . For a fund with  $IRR_{PEF}$  the grading values are assigned as follows (with  $g_1$  being the best grade):

$$G(PEF) = g_1 \Leftrightarrow q_{\min,1} \leq IRR_{PEF} < \infty$$

$$G(PEF) = g_k \Leftrightarrow q_{\min,k} \leq IRR_{PEF} < q_{\max,k}$$

$$G(PEF) = g_n \Leftrightarrow -100\% \leq IRR_{PEF} < q_{\max,n}$$

If the grades are assigned correctly, this grading system also fulfils the monotonicity requirement:

$$IRR_{PEF_x} = IRR_{PEF_y} \Rightarrow G(PEF_x) \sim G(PEF_y) \quad (1)$$

$$IRR_{PEF_x} < IRR_{PEF_y} \Rightarrow G(PEF_x) < G(PEF_y) \vee G(PEF_x) \sim G(PEF_y) \quad (2)$$

$$IRR_{PEF_x} > IRR_{PEF_y} \Rightarrow G(PEF_x) > G(PEF_y) \vee G(PEF_x) \sim G(PEF_y) \quad (3)$$

---

<sup>35</sup> The grading value is of course only meaningful if the VC fund to be graded is expected to perform in line with the benchmark.



## Fund Manager Selection Process

Pre-investment, it is more difficult to identify superior managers than it is to discourage and weed out obviously inferior managers. As inferior fund managers are constantly dropping out of the market, superior managers need to consistently beat a high target. Superior managers are therefore rare, by definition, and when they exist, their performance over long periods of time is likely to be only slightly better than the average of their peers. Where there is competition, there tends to be efficiency and great difficulty in maintaining top levels of comparative performance.

### 14.1 RELEVANCE OF FUND MANAGER SELECTION

Paradoxically, investors are often extremely cautious and risk averse in approaching the high-risk private equity asset class and therefore seek protection through diversification. Conservatism tends to eliminate all bets, with the aggregate portfolio approximating an index fund without the possibility of superior performance. The *raison d'être* for being in alternative assets is not to avoid losses, but to generate excess returns over public securities. With return targets such as 500 bp over equity, an overly high level of diversification makes it increasingly unlikely that returns above this threshold will be achieved.

As we discussed previously, over-diversification means poor capitalization of outperforming funds and guarantees substandard performance. With an increasing number of funds the cost of monitoring also increases and the benefits of risk reduction decline. While only the best fund managers appear to be able to deliver out-performance vs. quoted markets, it becomes less likely to have a high proportion of top-tier funds in a portfolio, as there is a limited population to pick from. Additionally, it is more difficult to get access to funds with an established investors base. Thus, the drive to avoid losses can sabotage future opportunities, and the investor's attitude to risk taking has to be consistent with risk inherent in the asset class.

Key is to be highly selective and to strike a proper balance between seeking exposure to top funds and diversification.<sup>1</sup> As a rule of thumb, investors need to target high quality funds across the entire private equity universe of buyout and venture capital funds. Without above-average fund manager selection skills, one cannot succeed in private equity.<sup>2</sup> Issues of geography, stage, industry, etc. are secondary because they tend to inhibit performance.

<sup>1</sup> Fraser-Sampson (2004a) argues that a fund-of-funds portfolio typically covers 3 vintage years with three buyout funds or five to six VC funds per year. Flag Venture Management (2003a) believes that approximately 20–25 relationships are necessary to participate in the majority of “hits” in a given investment cycle (of 3–4 years).

<sup>2</sup> Mark Weisdorf, vice-president of the CPP private equity investments, from an interview at AltAssets on 4 December 2002: “We are not in private equity for diversification ...we are in this to enhance return, we do not want to limit our ability to achieve our objectives by putting constraint in the way in which the portfolio is designed. We do not need diversification in private equity as much as we need diversification in the total portfolio, so we find it is more appropriate to rebalance in the public equity portfolio”.

Good fund managers increase the probability of success by focusing on inefficient markets that present the greatest opportunities.<sup>3</sup>

Unlike public equity managers, private equity partnerships typically raise capital for a fund, then close it to new investors. That means that at any one time, only a subset of the population of fund managers will be seeking new money. Therefore, against the background of importance in manager selection, a more opportunistic approach to investing should be taken than in the case of public securities. On the other hand, this approach, in combination with a diversification over time, can lead to “fillers” in the portfolio and dilute performance.

Manager selection and access is seen to be one of the keys to sustainable out-performance in private equity. It forms a distinct part of the investment process that can be efficiently structured. It is not mechanical, but requires industry experience, resources to conduct research and due diligence. Unfortunately this is easier said than done,<sup>4</sup> and the hint to focus on top-funds is probably as helpful as the observation that to become rich one needs to earn a lot of money. A thorough, consistent, detailed analysis and discipline in the due diligence process are critical.

## 14.2 WHY DUE DILIGENCE?

Due diligence covers all activities associated with evaluating an investment proposal and is commonly defined as *“the process of investigation and evaluation, performed by investors, into the details of a potential investment, such as an examination of operations and management and the verification of material facts”*.<sup>5</sup> It is a requirement for prudent investors as well as the basis for better investment decisions.

### 14.2.1 Due diligence as a requirement for prudent investors

As a matter of prudence, institutional investors have to select fund managers based on people, process and performance. According to Camp (2002), the phrase “due diligence” essentially denotes a legal obligation imposed on parties involved with the creation of prospectuses—directors, officers, underwriters, lawyers, accountants, and others—to use due diligence to ensure that they contain no material misstatements or omissions. In the context of private equity funds, the phrase “due diligence” is used slightly differently. Funds are issuing securities privately, and are therefore not required to provide their investors the same level of information as they would if they were selling the same securities in the public markets. Due diligence is an exercise that is “due” and that a “diligent” investor has to perform as a check of the substance of an investment proposal. As institutions also manage other people’s money, for transparency and for justification—in alternative assets things more often go wrong than they live up to inflated expectations—it is important to document that all relevant factors have been looked at. Due diligence has the goals of checking compliance with a

<sup>3</sup> See Sood (2003): “It is our fundamental belief that private equity does not function as a homogenized capital pool, but rather acts independently in geographies, classes and in different styles, allowing investors to ration capital according to their own specialist knowledge of a sector. By being mindful of the risks that exist in the sector, avoiding the ‘index approach’ and believing that private equity is a performance-driven business, it may be possible to outperform”.

<sup>4</sup> See Swensen (2000): “Active security selection plays a prominent role in nearly all institutional investment programs despite the poor relative results posted by most investors”.

<sup>5</sup> Source: [http://www.investorwords.com/1596/due\\_diligence.html](http://www.investorwords.com/1596/due_diligence.html)

requirement catalogue, of reducing the limited partner's uncertainty, and of understanding the risks associated with the deal. Moreover, it forms the basis for negotiating more favourable conditions and mitigants to perceived risks.

#### 14.2.2 Due diligence as a basis for better investment decisions

By consistently and methodically doing their due diligence, investors hope to make better investment decisions. Every fund promises top-quartile performance. According to Kelly (2002), the marketing line most often heard is that one's fund is in "*the first quartile of returns*".<sup>6</sup> This is often genuinely believed, as unrealised funds in particular are difficult to benchmark. Likewise, every fund-of-funds manager claims to follow a methodical and thorough due diligence procedure. In essence there are few differences. Investors agree on the need for a skilled and experienced management team, a good track record, a sensible and consistent strategy, and an alignment of interests between investors and fund managers.

As information on private equity funds is not publicly available, it is necessary to collect data on the funds considered for investment. The management of this activity is seen as the main source of competitive advantage—in fact probably to the extent that other tasks critical to the success of the investment programme, such as liquidity management, are overshadowed by this activity.

### 14.3 THE DUE DILIGENCE PROCESS

*It is important to note, however, that venture capital due diligence is, by its nature, an imperfect process because it has no clear end. Certainty is unattainable. It is easy, therefore, for some venture capitalists to drag the process out, grasping and hoping for something certain. Precious time and effort is often wasted performing due diligence on irrelevancies. But, there is no way venture capitalists can ever say, with absolute certainty, that a particular deal will make a great investment or will turn out to be a dog.*

Camp (2002)

In a private market different investors are exposed to various degrees of uncertainty. One of the main functions of due diligence is to reduce the uncertainty in order to improve the selection of suitable investments. To reduce uncertainty to the minimum, a research of the entire market would be necessary. To assess the quality and relative performance expectations of funds, a professional manager can analyse hundreds of factors, the majority qualitative rather than quantitative. As this is associated with significant costs, every investor will approach due diligence from a cost–benefit perspective.

#### 14.3.1 Limitations

Due diligence is based on cross-referencing, but often the lack of suitable comparables makes the analysis highly judgemental. The high reliance of qualitative aspects and judgement can become a liability. Without proper incentives limited partners have the tendency simply to raise the thresholds higher and higher to avoid personal exposure to criticism. As a result,

---

<sup>6</sup> See Meek (2002): "As one investor says: 'we always take the "top quartile" claim with a huge pinch of salt'".



potentially good investment proposals will be rejected. For example, in many cases newer partnerships are avoided, not necessarily because the fundamentals are not right or because the investment proposal is not convincing, but simply because not all points of the due diligence can be supported with tangible evidence.<sup>7</sup> Managers are often seduced by their own methodologies, especially if the approach is too mechanical. An open mind towards new ideas is required and clear reasons why certain fund characteristics are to be avoided need to be given.

Once a reputable institution has committed itself to invest in a fund, other investors tend to believe that it carried out a proper due diligence. As a health warning, one should not rely on other investors' findings and judgements. Information provided by other limited partners also needs to be taken with a "pinch of salt". It could well be that an individual investment manager subconsciously tries to protect himself by bringing other institutions to commit: if others made the same mistake, he may be less subject to blame.

### 14.3.2 Due diligence questionnaires

A process for due diligence puts a sound mechanism in place for effectively and efficiently evaluating potential deals according to predetermined criteria, and defines the scope, steps and timing of the exercise. Particularly for larger institutions, it is a challenge to be consistent in the evaluation of investment proposals. Here due diligence questionnaires—such as the one we propose in Appendix 14A—can be helpful; they are primarily tools for systematically compiling information and to make the fund manager selection process efficient and documented. In the industry such questionnaires are widely used, albeit in different ways. Some institutions ask fund managers who seek their investment to fill out their questionnaires. Others see questionnaires as intellectual property and use them only as internal checklists that they would not like to distribute to third parties.<sup>8</sup>

Questionnaires cover the points that should always be addressed when performing a due diligence, but good investment decisions cannot be built on a "tick boxes" approach. Instead, a questionnaire is helpful for maintaining minimum standards, to ensure consistency and that lessons learned are applied, and to formalize the repetitive "must" checks on features common to most proposals to save valuable time. Its main objectives are to avoid mistakes and omissions, to free up investment managers to explore the specifics of a fund proposal, and to form a better understanding of the intangibles, soft factors and patterns—where their expertise can create the highest value.

Even if investments are not made, such questionnaires can become important research tools for the private equity funds investment programme. There are various reasons why investors do not commit to a fund and not all of them are related to weaknesses of the proposal. Often the decision is a close call, and contact with good teams should be maintained, as it creates a future deal flow pipeline. Information collected through questionnaires helps to create an industry map, to identify patterns, and can thus become a source of competitive advantage. Through such information investors can also become aware of newly emerging

---

<sup>7</sup> Most limited partners make a difference between first-time teams and first-time funds; they usually have no interest in first-time teams (see AltAssets, 2002a, 2002b, 2003b), but invest on a selective basis in first-time funds. However, in new technologies first-time teams can often not be avoided.

<sup>8</sup> See Grove Street Advisors (2002): "*Grove Street respects the investment team's time and does not use a formal questionnaire*". On the other hand, Grove Street Advisors "*uses an internal checklist composed of the underlying criteria that further define expected future performance of an investment opportunity*".

practices in the market. Therefore, in any case, questionnaires should be systematically evaluated.

Associated with the process is also due diligence risk. When in difficult markets opportunities are running out, there is a temptation to let standards slip. To be consistent in the approach, in such situations one should be prepared rather to waive certain requirements than to lower the assessment standards. Finally a “due diligence report” is prepared to document all risks and implications regarding a decision to be made and forms the basis for future monitoring activities.

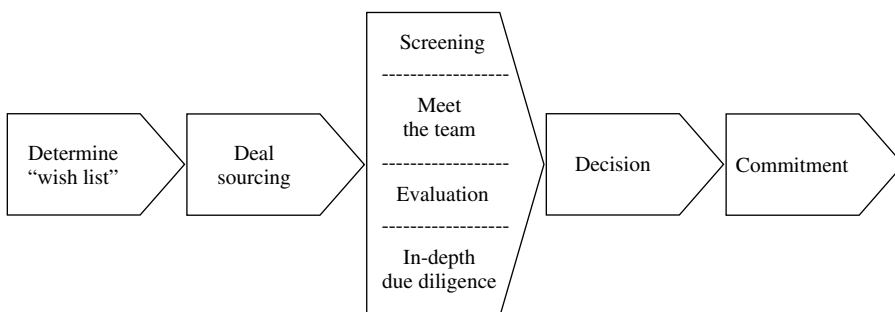
## 14.4 FUND MANAGER SELECTION PROCESS

With the growing acceptance of the private equity asset class, the number of fund managers has increased steadily. As discussed previously, benchmarks are weak and databases give limited information on the market. That makes the identification and evaluation of fund managers more important and also more difficult. Particularly in venture capital, many potentially outstanding fund managers have an operational or entrepreneurial background, but they are not used to dealing with institutional investors. Therefore, their proposals and documentation and previous reporting practices possibly do not meet the standards institutions are used to from, say, the big investment banks. Nevertheless, such managers may have the “right stuff” to deliver the high digit returns associated with venture capital and therefore often merit an in-depth evaluation.

Few advisors and consultants have experience and familiarity with the unique aspects of private equity. Because the industry and its practices are continuously evolving, categorizations are “fuzzy” and there are no clear “dos” and “don’ts”. Consequently, for fund managers in private equity—and for alternative assets in general—there is a different selection process (Figure 14.1) than for publicly quoted assets.

### 14.4.1 Determination of the “wish list”

The development of an investment strategy is important to efficiently manage the process, and forms the starting point for the fund manager selection. Based on the limited partner’s investment strategy and the resulting portfolio design, a “wish list” of fund characteristics needs to be established. The wish list defines the types of proposals that are consistent with



**Figure 14.1** Fund manager selection process

the limited partner's investment strategy. Then an active deal sourcer will identify "wish list funds" to be specifically targeted for investment.

#### 14.4.2 Deal sourcing

Investors in private equity funds need to use their network of industry contacts to identify and establish contact with a high-quality fund manager. It is critical to get as many opinions and leads as possible. This can be achieved through discussions with other investors or with entrepreneurs, by employing advisors and consultants, by researching the press on who funded spectacularly successful start-ups, etc. If one starts with a high number of leads, it increases the chances of finding what one is looking for.

Reactive deal sourcing, where investors often get showered with investment proposals, is not an efficient way of approaching the selection, as literally hundreds of private placement memoranda need to be checked as to whether they comply with set wish list characteristics or investment criteria. First-time teams often cannot do otherwise, but top teams typically get referred to limited partners by word of mouth or do not go out for fund raising at all and therefore need to be actively sourced. For investors in private equity funds, long-term relationships and actively looking for opportunities that fit the set criteria are critical. Opportunities are developed through proactive efforts to identify and approach teams before they even launch their fund-raising efforts. Moreover, this requires establishing a calendar of when these teams are expected go to the market.

#### 14.4.3 Screening

Due diligence requires significant time and effort, and there are many more managers than can be analysed in detail. Therefore, the next step in the process is a screening. Its objective is to quickly eliminate proposals that do not fit or are to be avoided based on the criteria and objectives laid out under the portfolio design. Deals screened out are *de facto* not worth further time and effort—this could be because they are in the wrong industry sector, the wrong stage or geographical focus, or simply do not meet minimum quality requirements.

Assuming that no knockout criteria are detected, there is a preliminary evaluation of the fund manager's proposed investment strategy, the management team's overall quality, its track record, the fund's structure and its terms. Are the fund's terms and conditions appropriate? If not, does further negotiation make sense? Is the fund's strategy convincing, does it differentiate itself from other proposals, is there potential for future success?

Only if there is good fit with the limited partner's portfolio strategy and wish list criteria are met should proposals be taken forward. This narrows down investment opportunities to a manageable few that merit an in-depth due diligence. Depending on the quality of the limited partner's deal flow, typically between half and two-thirds of the proposals are weeded out at this stage.

#### 14.4.4 Meet the team

Paraphrasing real estate, where it is "location, location, location", in private equity it is "team, team, team"—consequently, the next step is a meeting with the fund management team, to

better understand personalities, experience, dynamics and qualifications of the management team members. What is the overall quality of the management team? How complementary are they, how is the team cohesion, are incentives fairly balanced, what motivates the team, what is at stake for the individual team members? The organisational structure and the process for making decisions need to be understood. This evaluation is highly judgemental and can only be performed by an experienced investment manager. It can also only be seen as indicative and requires further detailed investigation during later stages of the due diligence.

There should also be a first analysis of the team's track record—as a group and individually. Going forward, what are the expected drivers of performance? At this stage proposed terms and conditions, alignment of interest factors, potential conflict of interests need to be addressed. Here potential “deal breakers” need to be identified and clarified—possibly items related to proposed terms and conditions, where the team is unwilling to negotiate or where the “gut feeling” tells the investor not to go forward.

Does one feel comfortable with the fund manager? At the end of the day, the limited partner will monitor them for years and incompatible views can create instability. In the other extreme there is a danger that personal aspects start to blur the picture. One should not forget that a limited partner often commits more than €10 million to a fund and of this—through management fees and carried interests—a few million might end in the team's pockets: who would not try to show his best side to potential investors under these circumstances? And, not to forget, does one feel comfortable with the co-investing limited partners? Are they committed to their private equity investment programme and financially strong, or is there a danger that they could become defaulting investors? Are they experienced and can one rely on their judgement during the years of fund monitoring to come?

#### 14.4.5 Evaluation

So far the objective has been to weed out funds that do not fit the investment strategy or where further in-depth analysis would not be meaningful. In the next step the proposal is evaluated against other opportunities on the limited partner's “long-list”. As no funds are equivalent, this is the critical step. Who are the competitors, how does the fund rank against the competitors and how is the fund positioned in the competitive landscape?

In private equity informed investment decisions are seldom based on meaningful numbers from which to work, and the entire due diligence is of an imprecise nature. Therefore, the assessment of investment proposals is about pattern recognition and requires expertise. In the context of direct investments, Camp (2002) argued that perhaps *“the most important thing that separates good venture capitalist from the rest of the pack is a dependable gut”*. Unfortunately, this is the point where, faced with high uncertainty, most investment managers tend to throw all analytical rigour overboard and start to rely entirely on their judgement and their “gut feeling”.

While in direct private equity investing the valuation of a company has an important role, limited partners usually do not attempt to value an investment proposal, as they would do in the case of traditional assets classes. As primary positions in private equity funds are bought at par, the investment decision is either “yes” or “no” and, apart from negotiations around terms and conditions, there is no meaningful mechanism to adjust for perceived risks. As a result, institutions have the tendency to impose an ever-growing list of criteria in the hope that this is the key to avoiding mistakes. We believe that this is fundamentally wrong and only leads to homogeneity and quasi-standardisation in an asset class that requires innovation

and evolution. Instead, we propose a structured assessment of two main dimensions of a fund's value:

- The fund's expected economic value is mainly dependent on the proposal's quality—which is not just “black” or “white”, but all shades of “grey” in between. We base the assessment on a qualitative scoring methodology as a kind of “expert system” (see Chapter 15). We calculate a fund's expected economic value based on cash flow scenarios generated by a grading-based economic model (see Chapter 16).
- Second, there is a real option value associated with the investment in the fund (see Chapter 22). For example, investing in a first time fund is generally perceived to be more “risky” than investing in an established firm, but allows access later on if the fund becomes a top performer and is over-subscribed in subsequent fund-raising.

The assessment of intangibles is difficult, and most of all in the case of the real option value. Therefore, it cannot be precise and will be relatively coarse. But also in the context of intangibles a structured process can only be of help and techniques like a qualitative scoring can improve the quality of the decision.<sup>9</sup> For simplification we propose an “uncertainty budget” to capture a fund's real option component. In the following chapters we will develop the necessary toolset.

At this stage an investor will have formed the hypothesis that the proposal fits the private equity funds investment programme's strategy and that it is of acceptable quality. The in-depth due diligence aims to confirm this hypothesis.

#### 14.4.6 In-depth due diligence

An in-depth due diligence is an exhaustive (and exhausting) and costly exercise and typically less than 20% of the initial proposals make it to this stage. It mainly comprises the legal due diligence and a further analysis of the team's track record and group dynamics.

An important part of the process is the legal due diligence. Often limited partnership agreements use unique terms, and private equity funds sometimes operate in an offshore jurisdiction with different rules. Therefore, such agreements need to be drafted by experts, which is very expensive to do too early in the process when the final investment decision is still very uncertain. On the other hand, any negotiation and changing of terms and conditions is only meaningful before investing, and therefore all sides have to work under strong time pressure.

*Track record can only be one of the determining factors. The others relate to the processes that a team has in place to attract good quality deal flow to select potentially rewarding investment opportunities, to interact with investee companies and to achieve positive results. It is the strength of these processes, coupled with the level of specialisation within a team that influences eventual outcomes.*

Maxwell (2002b)

Further analysis will focus on key issues identified previously. For new and emerging teams, an analysis will focus on the past performance of individual team members. In a case where the proposal is from an established team, a performance evaluation of its track record needs to be conducted. The objective is to determine how the fund manager performed in the past and whether this performance can be sustained. As a fund manager seldom has a

<sup>9</sup> See e.g. Edvinsson & Malone (1997).

fully realised portfolio, one is faced with the difficulties in valuation and benchmarking we have already discussed in previous chapters. The analysis needs to take several points into consideration:

- How much of the previously managed portfolios is realised and unrealised? How much is publicly traded?
- The realised performance needs to be verified, and the valuation of unrealised investments needs to be reviewed.
- What are the contributors to the value creation? Is it EBITDA growth of portfolio companies, suggesting that the team is strong in building companies? Is it multiples on exits, suggesting that the team is strong in generating exits? Or is the team's success dependent on financial engineering techniques, such as leverage?
- What is the historical volatility of returns, or in other words, how "lucky" were the fund managers? Did they come from a few "home runs" or did the team consistently generate good exits?
- What were the team's mistakes and did they learn from them?

It also makes sense to investigate key portfolio companies as case studies. Is the story consistent, how did the team source the deal and how did they add value?

The negotiation and the track record analysis also offers an opportunity for getting to know the team better and sets the theme for future monitoring activities. The track record analysis can be related to the analysis of the fund's organisational and managerial structure:

- What are the interpersonal dynamics? How "deep" and complementary is the team? Is the organisational structure appropriate?
- Can returns be attributed to individual team members? Are there "rain-makers"? Are workload, compensation and vesting fairly allocated?
- Has there been turnover or is there potential instability in the team? Are there succession issues to be resolved?

Investors in private equity funds need to use their network of industry contacts to do independent reference checks. One could, for example, get "second opinions" from co-investors in portfolio companies, entrepreneurs, competitors or industry advisors. Also existing investors' commitments should be verified—a contact with the other prospective limited partners may even be helpful for changing the fund's terms and conditions.

## 14.5 DECISION AND COMMITMENT

We see due diligence primarily as information gathering and evaluation, and not as a decision-making tool. In practice, the distinction is seldom made: due diligence is used to weed out inferior funds and the remaining proposals will be invested in. However, the typical due diligence based on a "tick box approach" will fail to identify superior investments. For private equity funds the peer groups have changing compositions. The composition of the peer group is unknown during the course of the due diligence. To consistently select the best teams, one needs to be able to assess the composition of this emerging peer group population, and to rank within this population of funds with very similar characteristics. In the search for the best teams, tracking and rating the performance of fund managers on a

continuous and systematic basis is key. This should make it clear that picking first-quartile funds cannot be an easy task, and requires superior selection skills. Therefore, the results of the due diligence can only be the input for a decision making process that takes not only the quality of the investment proposal, but also the programme's portfolio composition and investment strategy into consideration.

As a rule of thumb, less than 5% of initial proposals will eventually get the limited partner's commitment.

At all stages of the process, a "no" decision should be communicated to the fund manager as early as possible. "No" does not necessarily mean "no" forever: in situations where the team does not fit within the current allocation, where the team is over-subscribed, where competing proposals for various reasons were preferred and therefore led to a negative decision, the contact with the team should be maintained. This helps to retain an option to invest in a follow-on fund managed by the team or into a spinout of an individual team member.

Finally, this is not a one-sided decision. Especially over-subscribed teams may have their own due diligence criteria related to their potential investors, and also first-time teams should select their limited partners wisely. Would the investor be committed long-term? Does he understand the business? Does the limited partner have a reputation as being "difficult" or even as a defaulting investor? In a case where public institutions seek to become limited partners, are their investment restrictions (particularly those related to industry sectors and geography) and their transparency requirements (see discussion on Freedom of Information Act in the US and the UK) acceptable to the fund managers?

## **APPENDIX 14A: ILLUSTRATIVE DUE DILIGENCE QUESTIONNAIRE—VENTURE CAPITAL FUNDS\***

The questionnaire's main goals are to standardise and ease the collection of information, to improve its completeness and to allow for an easier comparison between investment proposals. The purpose is not to substitute for the due diligence process but only to prepare it and to serve as a guide to investors. We have used all reasonable efforts to produce a questionnaire of general application. Therefore, it is important, prior to sending out the questionnaire, to review each question and, when necessary, to amend the questionnaire to suit own requirements, the specific characteristics of the investment proposals and the stage of the selection process. For example, during the first screening phase, we do not recommend using the full questionnaire but rather a summarised version, which will only collect the information needed to make the interim decision of whether or not to investigate further. Generally, the questionnaire we propose here for VC funds can also be used for private equity, although for later stage investments often other points are relevant. Finally, we do advise periodical review of this questionnaire to adapt its content to the continuously evolving venture capital market. In general, responses to this questionnaire should be relied upon without proper review, further investigation or, especially in respect of special areas of concern, independent third-party data or references.

---

\* An electronic version of this questionnaire is available on our website ([WWW.limited-partners.com](http://WWW.limited-partners.com))

## PRELIMINARIES

We thank you for taking the time filling in this questionnaire. Feel free to contact us if any question is unclear. All technical terms are to be understood as defined by the European Private Equity and Venture Capital Association (EVCA).<sup>i</sup>

If information relevant for our investment decision is not covered by the questionnaire, feel free to add additional points at the end of each section or sections at the end of the document (but before the requested signatures). In doing so, we would appreciate that you do not change the numbering of the existing sections and questions. In Section XI on “documentation”, you will find a list of additional documents we would like to receive.

In reviewing your answer, we will assume that all amounts are in the same currency, as the Fund’s currency, as stated in Section I, Question 2. When this is not the case, please be sure to clearly state the currency.

We are looking forward to meeting you and discussing your investment proposal further.

## CONTENTS

- I General
- II Fund manager
- III Management team
- IV Investment strategy
- V Track record
- VI Fund raising and cash flows
- VII Legal and compliance
- VIII Terms
- IX Corporate governance
- X Administration
- XI Documentation
- XII Appendix

## I GENERAL

### Fund (“the Fund”)

1. Name (*Please insert legal name.*)
2. Size (*Please also state the Fund’s currency.*)
  - a. Minimum (*1st closing.*):
  - b. Target:
  - c. Maximum:
3. Focus (*Please describe the Fund focus (geography, sectors, stages, ....)*)

### Fund manager (“the manager”)

4. Name (*Please insert legal name.*)
5. Address (*If several offices, please list all locations stating their role and importance.*)

---

<sup>i</sup>The EVCA glossary is available from [http://www.evca.com/html/PE\\_industry/glossary.asp](http://www.evca.com/html/PE_industry/glossary.asp) (accessed 29 April 2005).



6. Website
7. Main contact(s) *(Please state the name(s), position(s), phone(s), fax(es) and email(s).)*
8. Prior relationship *(Please describe any prior relationship the management company may have had with us.)*

### **Sponsor or parent company (if any)**

9. Name *(Please insert legal name.)*
10. Address
11. Website
12. Main contact(s) *(Please state the name(s), position(s), phone(s), fax(es) and email(s).)*
13. Roles *(Please describe the sponsor or parent company's businesses. Explain the exact terms of their involvement and the expected added value. As requested in section XI on "documentation", please provide us with any existing contracts or agreements or, if not yet finalised, describe all foreseen contracts or agreements.)*
14. Prior relationship *(Please describe any prior relationship the sponsor or the parent company may have had with us.)*

### **Other parties related to the Fund**

15. Name *(Please insert legal name.)*
16. Address
17. Website
18. Main contact(s) *(Please state the name(s), position(s), phone(s), fax(es) and email(s).)*
19. Roles *(Please describe the related parties' businesses. Explain the exact terms of their involvement and the expected added value. As requested in the section XI on "documentation", please provide us with any existing contracts or agreements or, if not yet finalised, describe all foreseen contracts or agreement.)*
20. Prior relationship *(Please describe any prior relationship these parties may have had with us.)*

## **II FUND MANAGER**

1. Legal structure *(Please explain the legal structure of the manager.)*
2. Establishment date
3. Ownership *(Please give the evolution of the ownership of the manager (all entities) since inception and the foreseen changes.)*
4. Activities *(Please describe the evolution of the activities since inception as well as plans for the future.)*
5. Financial stability *(As requested in section XI on "documentation", please provide us with a detailed budget.)*
6. Private equity clients *(Please explain the type of investor group ("the LPs") you target and provide a list of main clients (incl. size of assets, duration of client relationship). As requested in section XI on "documentation", please provide us with three client references.)*
7. Competition *(Please list your main competitors and explain why you believe you have competitive advantages.)*

### III MANAGEMENT TEAM

1. Staff members (*Please give the list of all staff members by type and sorted by hierarchical position.*)

---

Name	Position	Age	Nationality	Years with the team	Years in PE
------	----------	-----	-------------	---------------------	-------------

---

- 
2. Other relevant joint experience (*Please detail all the joint experience team members may have had outside the current team.*)
  3. Private equity experience—Investment (*Please list all team members with experience in getting access to the deals and making investments. Provide us with a short description of their experience (using, if possible, EVCA definitions<sup>ii</sup>) Give an explanation for the major cases of success (or failure).*)
  4. Private equity experience—Management (*Please list all team members with experience in managing and adding value to private equity companies. Provide us with a short description of their experience (using, if possible, EVCA definitions<sup>ii</sup>) Give an explanation for the major cases of success (or failure).*)
  5. Private equity experience—Exit (*Please list all team members with experience in exiting investments. Provide us with a short description of their experience (using, if possible, EVCA definitions<sup>ii</sup>) Give an explanation for the major cases of success (or failure).*)
  6. Industry sectors experience and expertise (*Please list all team members with experience or expertise in the targeted industry sectors (using, if possible, EVCA definitions<sup>ii</sup>). Provide us a short description of their experience or expertise Give an explanation for the major cases of success (or failure).*)
  7. Country or regional experience (*Please list all team members with experience in the targeted countries or regions. Provide us with a short description of their experience Give an explanation for the major cases of success (or failure).*)
  8. Operational experience (*Please list all team members with experience in running operations similar to the one of the companies targeted. Provide us a short description of their experience Give an explanation for the major cases of success (or failure).*)
  9. Other relevant experience or expertise (*Please list all team members with other relevant experience or expertise such as advisory, consulting or investment banking. Provide us a short description of their experience or expertise Give an explanation for the major cases of success (or failure).*)
  10. Roles and responsibilities (*Please explain the roles and responsibilities of each team member and indicate how much of their time will be allocated to the Fund during the investment period and after.*)
  11. Team evolution (*Please indicate the evolution of the team since inception and the plans for the future.*)

---

<sup>ii</sup>In the Appendix, we have provided you with some of the EVCA definitions. For an exhaustive list, please consult the EVCA glossary, which is available from [http://www.evca.com/html/PE\\_industry/glossary.asp](http://www.evca.com/html/PE_industry/glossary.asp) [Accessed 29 April 2005].

	Inception	...	Year <sub>-1</sub>	Now	Year <sub>+1</sub>	Year <sub>+2</sub>	...
<b>All staff</b>							
Hiring							
Departure							
Net							
Total							
<b>Investment professional</b>							
Hiring							
Departure							
Net							
Total (A)							
Number of companies in all portfolios under management (B)							
Number of companies per investment professional (B)/(A)							

12. Staff departure (*For departure, please state the date, the deal in which they were involved, their role in these deals, the reason for departing and any settled or pending litigation.*)
13. Staff financial packages (*Please explain the compensation scheme for each staff member.*)
14. Alignment of interests (*Please explain how the interests are aligned within the management team throughout the life of the Fund.*)
15. Communication (*Please explain the communication and co-operation between your company's offices.*)
16. Dangerous activities (*Are any of the team members engaged in high risk activities, such as speleology, scuba diving or air sports? If yes, list the name and the nature of the activity.*)
17. External resources (*If the manager intend to use or has used in the past external resources such as consultant, please list these resources giving a short description of the services provided or to be provided.*)
18. Outside activities (*Please indicate for each staff member, the list of current and expected outside activities (e.g. existing and future funds, board(s)/committee(s) positions, consulting or lecturers) the estimated workload, the eventual added-value this could bring to the Fund and the expected duration.*)
19. Other interests (*Please state for each team member all financial interests outside the Fund they may have stating the nature, the materiality, the time allocated and any potential conflict of interests.*)

IV INVESTMENT STRATEGY

Overall strategy

1. Focus *(Please detail the Fund focus based on the characteristics of the expected portfolio companies.)*
- a. Stage focus *(Please specify in percentages the expected portfolio composition at initial investment (e.g. a follow-on investment to finance the expansion stage of a company which was in its start-up phase at initial investment has to be accounted for in the start-up category and not the expansion category) according to the EVCA stages definitions: see Appendix.)*

Stage focus	Number of companies			Amount invested		
	Minimum	Maximum	Expected	Minimum	Maximum	Expected
Seed						
Start-up						
Expansion						
Replacement capital						
Buyout						
Others (please specify)						

- b. Geographic focus *(Please specify in percentages the expected portfolio composition.)*

Country	Number of companies			Amount invested		
	Minimum	Maximum	Expected	Minimum	Maximum	Expected

- c. Sector focus *(Please specify in percentages the expected portfolio composition according to the EVCA industry sectors definitions: see Appendix.)*

Sector	Number of companies			Amount invested		
	Minimum	Maximum	Expected	Minimum	Maximum	Expected

2. Viability of the strategy (*What is the expected return of your proposal? Please describe the risks involved in your strategy. How do you plan to manage these risks? Do you use special covenants in your investments for risk management purposes?*)
3. Uniqueness of the strategy (*Please explain what differentiates your strategy from others and describe its competitive edge.*)
4. Market description—countries/regions (*Please describe the status of the market in the countries/regions you are targeting and explain how you expect they will evolve.*)
5. Market description—sectors (*Please describe the status of the market in the sectors you are targeting and explain how you expect they will evolve.*)
6. Market description—stages (*Please describe the status of the market in the stages you are targeting and explain how you expect they will evolve.*)
7. Competition (*Please list your competitors and explain their and your competitive edge. How do you expect competition will evolve?*)
8. Fund size (*Please explain why your minimum, target and maximum fund sizes are adequate for the foreseen strategy and explain how your strategy will change depending on the final size achieved.*)
9. Target companies (*Please describe the target companies, stating key financial data including the average turnover, the net asset and the number of employees.*)
10. Diversification (*Please give details about the planned diversification of your portfolio by filling out the following table. If the Fund intends to invest in several stages, countries or industry sectors, please also give the details by stages, countries or industry sectors, as needed.*)

	Minimum	Maximum	Expected
Number of portfolio companies			
Amount invested per portfolio companies (total of all expected rounds of financing)			

11. How has this been for prior funds? (*If the Fund is a follow-on fund, please also explain any change of strategy and, if possible, answer for each previous fund questions 1.a, 1.b and 1.c.*)

### Deal flow consideration

12. Uniqueness of the deal flow strategy (*Please explain what differentiates your strategy from others.*)
13. Level of competition (*Please describe the level of competition you are subject to in respect to sourcing.*)
14. Sourcing (*Please give the percentages for own and sourcing and the statistics regarding the number of deals at the various stages of the selection process.*)
15. Network (*Please list or give examples of sourcing, stating the name/nature of the source and a description of the deal. As requested in section XI on “documentation”, please provide us with some references.*)

16. Finders-fee (*Please state your policy regarding finders-fee. Please include a list of transactions where finders-fees have been paid. Please state the amount paid.*)
17. Current deal-flow (*Please provide a list of the current deal-flow, including a short description of the projects.*)

### Investment consideration

18. Selection procedures (*Please describe in detail the selection process. As requested in section XI on “documentation”, please provide examples of reports and working papers.*)
19. Decision-making (*What is the decision procedure? Who takes the investment decision and how? Does someone have veto rights?*)
20. Network (*Do you have access to specific expertise during your due diligence? As requested in section XI on “documentation”, please provide us with references, giving the nature of the network resource, the deals they have been involved in and their contribution.*)
21. Syndication policy (*Please indicate whether the Fund will be lead, sole or co-investor.*)
22. Co-investment network (*Please give an overview of your existing co-investment network by filling in the following table. As requested in section XI on “documentation”, please provide us with some references.*)

Company	Co-investor	Co-investor's role	Amount co-invested	Your investment

23. Follow-on policy (*Please describe your reserve policy with regards to the follow-on rounds of investments and your anti-dilution strategy.*)

### Portfolio management consideration

24. Management procedures (*Please describe in detail the management of portfolio companies. Who takes the investment decision and how? As requested in section XI on “documentation”; please provide examples of reports and working papers.*)
25. Type of involvement (*Please explain your involvement in portfolio companies such as operative involvement, financial engineering, control positions, minority positions, etc. Do you hold board seats in portfolio companies?*)
26. Investment valuation (*Please describe the portfolio valuation procedure. Do you follow the AFIC, BVCA & EVCA or other valuation guidelines? Who does the valuation, who reviews it and how often?*)
27. Portfolio company reports (*Please discuss reports provided by the portfolio companies and specify the frequency. As requested in section XI on “documentation”, please provide examples of reports.*)

28. Network (*Do you have access to specific expertise to add value to your investee companies. As requested in section XI on “documentation”, please provide us with references, giving the nature of the network resource, the deals they have been involved in and their contribution.*)
29. Currency exposure (*If the Fund will be exposed to currency risk, please describe your currency risk policy.*)

### Exit considerations

30. Exit strategy (*Please explain your exit strategy. Which exit strategies have been used for prior funds? How do you maximise the exit value?*)
31. Exit procedures (*Describe in detail the firm’s exit procedures. As requested in section XI on “documentation”, please provide examples of reports and working papers, where available.*)
32. Decision-making (*What are the decision procedures? Who takes the exit decision and how?*)
33. Network (*Do you have access to specific expertise to exit your investee companies. As requested in section XI on “documentation”, please provide us with references, giving the nature of the network resource, the deals they have been involved in and their contribution.*)

## V TRACK RECORD

1. Private equity products (*Please list all products (funds, advisory mandates, client portfolio, etc.) sorted by establishment date stating the vintage year, the fund name, the focus and the size.*)

Vintage year	Fund Name	Fund focus	Fund size

(Please answer the following questions (2 to 7) for each previous fund or mandate.)

2. Current position (*Please provide us with the following information.*)
- Total commitment:
  - Total contribution:
  - Total investment:
  - Number of investee companies:
  
  - Total distribution (value):
  - Total distribution (cost):
  - Number of companies fully exited:

- Current portfolio (value):
  - Current portfolio (cost):
  - Number of companies in portfolio:
3. Performance (*Please provide us with the gross and net IRR and multiples (TVPI, RVPI & DPI) of the fund on a quarterly basis since inception. As requested in section XI on “documentation”, please provide us with a file containing all the fund’s cash flows.*)
4. Exchange rates (*If applicable, please provide us with the performance excluding the exchange rate impact.*)
5. Realised investments (*Please list all realised investments in the previous fund and indicate who was responsible for the respective investments and explain why the investment was a success or a failure.*)
6. Unrealised investments (*Please list all unrealised investments in the previous fund and indicate who is responsible for the respective investments, whether or not the investment is a special attention case and when it is foreseen to exit the investment.*)
7. Valuation (*Please explain whether your valuations or performance have been audited (and if applicable, provide us with the audited report) and under which standard investments have been wanted.*)

## VI FUND RAISING AND CASH FLOWS

1. Initial offering date (*When did you formally start the fundraising process? Is it the first or a subsequent closing round?*)
2. Anticipated closing time table (*Please fill in the following table by expected closing.*)

---

Closing date	Minimum	Maximum	Expected
--------------	---------	---------	----------

---

3. Commitments received or expected to date (*Please list by types (firm, soft, ...) the commitments received to date and the names of the investors (“the LPs”) and its public/private nature. As requested in section XI on “documentation”, please provide us with the commitment letters.*)

---

Type	LPs	Public/private	Commitment
------	-----	----------------	------------

---

4. Existing investors (*Please list all investors in previous funds or mandates and state the status of the negotiations to invest in the current Fund. For each one not pursuing an investment, please explain the reasons for not doing so.*)



5. Team investment (*Please indicate the total amount to be invested by the team or, if possible, by each team member.*)

Member's name	Commitment	Indicative percentage of total personal wealth	Percentage financed through leverage

6. Team previous investments (*Please indicate the total amount invested by the team or, if possible, by each team member in all the funds or mandates that are or have been managed by the team.*)

Member's name	Commitment	Product

7. Distribution waterfall (*Please give details about distribution priority, reinvestments and a description of preferential distribution. If possible give several numerical examples.*)
8. Distribution policy (*Please indicate whether you distribute in cash or in kind and, if distributions in kind are foreseen, under which condition and valuation.*)
9. Drawdown (*Please list all the drawdowns in percentage of commitment since inception and the one to be expected and give details about the utilisation.*)

Date	Drawdown	Utilisation

## VII    LEGAL AND COMPLIANCE

1. Domicile(s) (*Please indicate the expected country(ies) of jurisdiction.*)
2. Tax structure (*Please explain the tax structure.*)
3. Counterparties (*Please provide a list of professional counterparties with whom the manager maintains a business relationship, stating the name, a contact name, the nature of the relationship and the duration of it, such as legal advisors, auditors, consultants, bank used to deposit cash or distribution channel. Did you cancel any relationship in the past? If yes, please provide us with the reason.*)

4. Registration (*Are the Fund or the manager registered with any regulatory and/or supervisory bodies? When was the last inspection of those bodies?)*
5. Membership (*Are the Fund or the manager member of any professional body?)*
6. Open legal actions (*Are any lawsuits pending against the manager or any of the funds under its management? Have any members of the team been prosecuted for criminal activities or any acts of fraud? Are any of the team members currently under investigation e.g. by FSA or COB? If so, please give details.*)
7. Outside activities (*Are all the staff members contractually free to work full time for the manager vis-à-vis their prior/present employer and have they complied with all their obligations to their prior/present employer contained in their contract or otherwise.*)
8. Ethics (*Please describe your ethics policy. What is your policy and due diligence with regards to ethics issues within investee companies such as environment or defence industry.*)

## VIII TERMS

1. Duration (*Please state the Fund's duration, including, if applicable, the possible extensions and the conditions.*)
2. Investment period (*Please state the Fund's investment period, including, if applicable, the possible extensions and the conditions.*)
3. Establishment fees
4. Equalisation premium (*Do LPs committing to the Fund after the first closing have to pay an equalisation premium? If yes, what are the interest charged and the calculation method?)*
5. Management fees (*Please specify the percentage, the basis for the calculation and the periods.*)
6. Source of management fees (*Will the management fees be taken from the committed capital or charged as additional costs?)*
7. Other fees or expenses (*Will other fees or expenses (e.g. overhead, legal, due diligence costs, transaction fees, investment banking fees, monitoring fees, directors fees) be charged to the Fund?)*
8. Fees offset (*Are the fees earned from the portfolio companies (e.g. monitoring fees, directors fees) by the manager deducted from the management fees. And if yes, in which portion?)*
9. VAT (*Please describe the VAT situation on fees and expenses.*)
10. Carried interest (*Please give the carried interest you charge, the exact repartition to individuals. Who has the discretion over any unallocated carry? What is the carry vesting schedule and what are the constraints over distribution?)*
11. Clawback (*Please give details about the Fund's clawback clause.*)
12. Hurdle rate
13. Catch-up
14. Key persons provision (*Please describe the key persons provision foreseen. Which team members are key persons?)*
15. Leaver clause (*Please describe the leaver clauses. Under which circumstances can the LPs dismiss the manager and under which terms and conditions?)*
16. Transfer of LP rights (*Please explain your policy regarding the transfer of LP rights.*)

17. Co-investments (*What is the policy for co-investments of LPs and team members? Please include a list of LPs and team members' co-investments.*)
18. Personal participations in rejected deals (*Can any team member invest, or has any team member invested, in rejected deals? Please include a list of such investments.*)

## IX CORPORATE GOVERNANCE

1. Board(s)/committee(s) (*Does the Fund have any board(s)/committee(s)? If so describe the role of the board(s)/committee(s) and the list of members stating their names and a short description of their background and current positions.*)
2. Member policy (*Please describe your policy regarding members of the board(s)/committee(s).*)
3. Board(s)/committee(s) of prior funds (*Do or did the previous funds or mandates utilise any board(s)/committee(s)? If so describe the role of the board(s)/committee(s) and the list of members stating names and a short description of their background and current positions.*)
4. Incentives (*Please explain the compensation scheme for board/committee members. List of individuals and their total emoluments entitlements from the Fund.*)
5. Conflict of interests (*Identify and discuss any actual or potential conflict of interests with respect to the manager, sponsor, parent company or any other related parties. Please describe the conflict of interests policy and procedure.*)

## X ADMINISTRATION

1. In-house administration (*What are the tasks of the fund administration performed in-house? What systems are used for the fund administration, and are the systems developed in-house or does the company use standard packages?*)
2. Outsourced administration (*Which tasks are fulfilled by external service providers (including names of companies)? How long have the relationships with those service providers lasted and has the firm ever terminated any service providers? If so explain the circumstances.*)
3. LP reporting (*Please describe reporting to LPs and specify frequency. As requested in section XI on "documentation", please provide us with an example of LP reporting.*)
4. Standards (*Do you follow any standards or guidelines in your reporting?*)
5. Drawdowns (*What is the drawdowns procedure? Do you use standard templates (if yes, could you provide an example?) and which info is provided?*)
6. Repayments (*What is the repayments procedure? Do you use standard templates (if yes, could you provide an example?) and which info is provided?*)

## XI DOCUMENTATION

Could you provide us with the following documents in an electronic form, if possible? Please write the name of the document in the respective table and, if provided electronically, the file name. Please do not include these additional documents directly into the questionnaire.

**In case these documents are amended or updated, please ensure that we receive the new version.**

Document	Document name	File name
Private placement memorandum.		
Limited partnership agreement or other form of investment agreement.		
Last available audited report of the previous funds as well as most recent quarterly report.		
Reference list ( <i>Please include professional references regarding team members, previous and present portfolio companies, LPs, professional network, e.g. legal advisor, corporate finance, accountant, etc.</i> ).		
Detailed curriculum vitae of every team members (starting with a summarised background description).		
Detailed curriculum vitae of every board(s)/committee(s) members (starting with a summarised background description).		
Diagram of ownership and legal structure.		
Example of LP report.		
Example of report from portfolio company.		
Operating procedures ( <i>e.g. investment policies, due diligence procedure, checklists, questionnaires, valuation models, investment approval report, preliminary and final investment reports</i> ).		
Performance ( <i>Please provide an Excel file with the cash flows for all investments made by the group and calculate the IRR and multiple by funds (net and gross), by stage, by sector, by country/region, by role (lead or not) and by responsible investment professional</i> ).		
Any agreement or side letter already signed, including co-investment agreements.		
Working documents (due diligence, . . . ) of the current deal flow and for each company already in portfolio and latest financial data and reports.		
Press book.		
Staff publications (only when related to the Fund).		
Commitment letters.		
All agreements signed by the Fund with:		
– the manager,		
– the sponsor or parent company,		
– other LPs,		
– any other related parties.		
All agreements signed by the manager with:		
– the sponsor or parent company,		
– other LPs,		
– any other related parties.		

Please sign the following statement.

[Date]

We confirm to the best of our knowledge and belief, at the date of the present due diligence questionnaire, that all the information presented to you is true and fair and that it constitutes a complete and proper presentation of [Name of the management company] (“the management company”) and of [Name of the Fund] (“the Fund”).

We commit to provide you with any additional information as soon as we become aware of, notably all the information not yet provided to you and requested by other potential investors.

[If the 1st closing has already taken place.] Since the launch of the Fund, no matters or events have come to our attention up to the present time, which would have impacted or are likely to impact the expected performance of the Fund. To the best of our knowledge, the valuation of the existing investment is fair as estimated at the date of the reports provided to you and in accordance with the applicable EVCA valuation standards.

We have no plans or intentions that may materially affect the future carrying value of the Fund.

Authorised signature (*We would like to have the signature of all key staff members.*)

Name

Date

## XII APPENDIX

### EVCA stage definitions<sup>iii</sup>

- *Seed stage*. Financing provided to research, assess and develop an initial concept before a business has reached the start-up phase.
- *Start-up*. Financing provided to companies for product development and initial marketing. Companies may be in the process of being set up or may have been in business for a short time, but have not sold their product commercially.
- *Expansion capital*. Also called development capital. Financing provided for the growth and expansion of a company, which may or may not break even or trade profitably. Capital may be used to: finance increased production capacity; market or product development; provide additional working capital.
- *Replacement capital*. (secondary purchase). Purchase of existing shares in a company from another private equity investment organisation or from another shareholder or shareholders.
- *Buyout*. A transaction in which a business, business unit or company is acquired from the current shareholders (the vendor).

---

<sup>iii</sup>Source: EVCA glossary, available from: [http://www.evca.com/html/PE\\_industry/glossary.asp](http://www.evca.com/html/PE_industry/glossary.asp) [Accessed 29 April 2005].

---

**EVCA industry sectors definitions**

- *Agriculture*. Animal husbandry, crop cultivation, fishing, forestry.
- *Biotechnology*. Agriculture/animal biotechnology (e.g. plant diagnostics), industrial biotechnology (e.g. derived chemicals), biotechnology-related research and production equipment.
- *Chemicals and materials*. Agricultural chemicals, commodity chemicals, speciality or performance chemicals/materials, coatings and adhesives, membranes and membrane-based products.
- *Computer: hardware*. Computer mainframes, laptops, minicomputers, PDA/hand-held devices, optical scanning equipment, voice synthesis/recognition equipment (*please include manufacturers, resellers and distributors of computer hardware*).
- *Computer: semiconductors*. Semiconductors, electronic components (e.g. integrated circuits, transistors), semiconductor fabrication equipment.
- *Computer: services*. Data processing, hardware maintenance, IT consulting, IT training.
- *Computer: software*. Application software products, operating systems and systems related software for all types of hardware, systems integration, and software development (*please include manufacturers, resellers & distributors of computer software*).
- *Construction*. Construction services, manufacture of building materials, manufacture of pre-fabricated buildings and systems.
- *Consumer: retail*. Retailing of consumer products and services, including leisure and recreational products.
- *Consumer: other*. Manufacture and supply of consumer products.
- *Electronics*. Batteries, power supplies, fibre-optics, analytical and scientific instrumentation.
- *Energy*. Oil and gas exploration and production, exploration and drilling services and equipment, coal-related, energy conservation-related, alternative energy.
- *Financial services*. Banking, insurance-related, real estate, securities and commodities brokers.
- *Industrial automation*. Industrial measurement and sensing equipment, process control equipment, robotics, machine vision systems, numeric and computerised control of machine tools.
- *Industrial products and services*. Industrial equipment and machinery, pollution and recycling-related, industrial services.
- *Internet technology*. Browsers, portals, search engines and other Internet-enabling technology, website design/consultancy, ISPs.
- *Manufacturing (other)*. Business products and supplies, office furniture, textiles, hardware and plumbing supplies, pulp and paper, printing and binding, packaging products and systems.
- *Medical: healthcare*. Health institutions, hospital management, handicap aids and basic healthcare supplies.
- *Medical: instruments/devices*. Technologically advanced diagnostic and therapeutic products and services.
- *Medical: pharmaceuticals*. Drug development, manufacture and supply.
- *Services (other)*. Engineering services, advertising and public relations, Distributors, importers and wholesalers, consulting services (*excluding IT consulting—see Computer: services*).

- *Telecommunications: hardware.* Voice and data communications equipment, cable/mobile/satellite network equipment (*excluding telecoms carriers*).
- *Telecommunications: carriers.* Cable/mobile/satellite telecoms carriers.
- *Communications (other).* TV and radio broadcasting, media houses, publishing.
- *Transportation.* Airlines, railways, buses, airfield and other transportation services, mail and package shipment.
- *Other.* Mining, utilities, conglomerates.

## Qualitative Fund Scoring

In Chapter 13, we have presented a prototype internal grading system that requires a qualitative and a quantitative scoring as inputs. In this chapter we describe the qualitative scoring. The objective of the qualitative scoring is to determine a private equity fund's degree of compliance with current "mainstream characteristics",<sup>1</sup> i.e. what are perceived as being the characteristics of a top-performing fund. It could be seen as a measure of how well-adapted a fund is to the private equity market environment at this specific point in time. Based on this, funds can be ranked according to their deviation from mainstream characteristics.

Pre-investment the qualitative score forms the only input into our Grading-based Economic Model (GEM), which we use to determine a private equity fund's value, as we will explain later in Chapter 16. This implies that a fund that deviates significantly from mainstream characteristics, i.e. a low qualitative score, will be assigned a low expected performance grade and thus a low economic value. The qualitative scoring is not a substitute for the due diligence but is based on the analysis of its results. It aims to categorise and compare investment proposals. While there is a kind of "market consensus" of what represents an "ideal fund" in terms of structure, industry and geographical focus, team, etc., in this unregulated and opaque asset class there is ongoing innovation. Therefore, the definition of what constitutes mainstream will continuously evolve. Some teams may try to differentiate themselves from the "rest of the pack" to attract investors or to adapt to the changing environment. If the deviation from the mainstream practice is justified, limited partners do such investments as part of an allocation to niche strategies. If successful, elements of this innovation gradually make it into the mainstream and new evidence continuously needs to be taken into account.

If applied in a disciplined manner, the qualitative scoring can assure consistency in the initial assessment and the monitoring of funds throughout their lifetime and can therefore be a powerful tool for the management of a private equity funds investment programme.

### 15.1 SCORING APPROACH

The qualitative scoring is based on the assessment of an investment proposal's key dimensions and uses a peer-group population as a yardstick. Therefore, the first step is to identify the "peer-group" universe, which will be used as a reference, e.g. European early stage technology funds.

In this context, we differentiate two peer groups. Because of the long investment cycles statistics on the historical peer group of fully realised vintage years will be "stale". Reliable quantitative information will relate to vintage-year cohorts that, in the extreme, date back more than 10 years. Therefore, qualitative scores are mainly based on interim data, anecdotal evidence and lessons learned from relatively young funds.

---

<sup>1</sup> Of course, there can be more than one mainstream class but for simplification we restrict our discussion to just one mainstream.



The benchmarking peer group of the same vintage year is largely unknown. Its composition needs to be “estimated”, based on the current conditions and the prevailing mainstream in the private equity fund market. The scoring is based on the assumption that the unknown future peer group will be comparable to the population of recent vintages. Even if the composition of the peer group is not known, to a high degree the investment decision is based on a list of criteria that is generally seen as consistent with the best-performing funds. Assuming that there is no radical shift in what constitutes mainstream characteristics, it is also relatively easy to compile a list of criteria indicative of bottom performance.<sup>2</sup>

To determine the scores, one has to evaluate whether sufficient information is available and whether it is relevant for forming an opinion. Also, criteria such as robustness of evidence (i.e. can it be observed over longer time periods and under various conditions?) or persistence (i.e. is this expected to continue?) need to be taken into account. In line with the objective to determine a fund’s quartile rank within the peer group, we express the quality by scores of 1–4 (Table 15.1).<sup>3</sup>

The qualitative scoring shares characteristics with an expert system. It therefore cannot be followed “mechanically” but has to be based on discussion with investment managers close to the deals and the market.<sup>4</sup> Neither can it be seen as “static”. The scoring methodology needs to be continuously updated and calibrated as new mainstream characteristics emerge and industry players do not further apply certain established practices.

Scores are of course not strictly additive, but within the “continuum” of operating funds that have attracted sufficient private investments, it appears to be a reasonable heuristics. Terry Smith followed a comparable approach in his 1992 analysis of accounting techniques. He introduced “blob” scores for companies (with a “blob” representing the use of creative

**Table 15.1** Qualitative Scores

Score	Description
1	In the dimension assessed the fund’s characteristics are in line with mainstream characteristics and can even be considered as a strong point
2	In the dimension assessed the fund’s characteristics are in line with mainstream characteristics
3	In the dimension assessed the fund’s characteristics show some deviation from mainstream characteristics or are to be considered as weak points. Too many of such weaknesses in other dimensions would make it unlikely that the fund finds (additional) investors
4	In the dimension assessed the fund’s characteristics show a clear deviation from mainstream characteristics or are seen to be a considerable weakness. Unless compensated by strengths in other dimensions, it makes it unlikely that the fund finds (additional) investors

<sup>2</sup> There is a caveat: while spectacular successes get noted, investors tend to keep very quiet about failures—so interestingly that makes it a challenge to keep ahead here, too.

<sup>3</sup> Of course, other scales could be used, but even numbers have the advantage that they do not allow having a neutral position and, therefore, force a positive or a negative judgement. Too many scores should be avoided—what is the difference between a score of 67 and 68 on a scale of 100?

<sup>4</sup> We have added a series of quotes from industry experts to this chapter to demonstrate that a qualitative scoring relies on experience and expertise rather than on hard facts. Most of them are taken from interviews conducted by AltAssets. We take this opportunity to thank Chris Davison, Associate Director, Almeida Capital, who has provided us with these interviews.

accounting techniques; see Smith, 1996). For the companies he analysed, this “blob” scoring has proved to be a remarkably robust methodology for predicting financial distress.

Without having long-term data to support this claim, based on our experience the pre-investment scores assigned to a fund are indicative for the time still required for finding the critical mass of investors to close the fund. While this does not establish a clear link between the pre-investment grade and a fund’s final performance, it nevertheless approximates an expert consensus opinion on the fund’s potential.

## 15.2 SCORING DIMENSIONS

The scoring definition for private equity funds requires identifying dimensions that, based on experience, seem best in predicting success or — more often — failure. For illustration, we discuss as dimensions management team skills, stability and motivation, the fund strategy, the fund structure, the external validation and the overall fit. For each dimension a weight reflects its importance. Again, this is based on experience rather than statistical data. Most investors would give the highest weight to the management team, which is key to any investment proposal. In our daily work we found the allocations shown in Table 15.2 meaningful. Certainly other investors would weight these dimensions differently, but there will be a broad consensus on the extremes, i.e. characteristics of “top teams” or features that in the past had led to failures. The scoring will be robust in the sense that there should be consensus between different investors regarding the potential top and potential bottom performers, as funds that rank high or low in all dimensions will be unaffected by weighting changes.

Each dimension requires scoring of several sub-dimensions. Also, the sub-dimensions could have different weights. In line with the importance, a higher number of sub-dimensions could be analysed.

### 15.2.1 Management team skills

To form an opinion on a private equity fund’s management team skills, mainly experience and qualifications can be assessed. Young private equity funds occasionally do not have a complete management team and are not ready to manage without assistance. Such funds could look elsewhere for support, e.g. from external consultants, board of directors or board of advisers. To be able to rely on these parties, investors would need to perform a full due diligence on them and get the assurance that they will remain for the whole fund’s lifetime. As

**Table 15.2** Qualitative scoring—dimensions’ weights

Dimension no	Dimension	Weight (%)
1	Management team skills	30
2	Management team stability	10
3	Management team motivation	10
4	Fund strategy	15
5	Fund structure	10
6	External validation	10
7	Overall fit	15

this will generally not be possible, and as external resources often imply significant potential conflict of interest, industry best practices suggest that all the “critical” competencies be within the team. For assessing the management team skills, a series of sub-dimensions could be analysed, such as the private equity experience, the operational experience, the industry sector experience, the country or regional experience or the team size, balance and coverage.

*We like to see teams that have a broad base of skills. What those skills are depends on the sector focus of the fund, but generally it is important for them to have industry expertise and for them to be able to show that they can really add value to their portfolio companies in terms of operational and financial improvements. We also look for financial skills.*

Chris Manser, Winterthur Group

#### 15.2.1.1 Private equity experience

Experiences from other industries cannot be easily transferred to private equity. Too often after doing two deals people think they know it all, but it takes often years to understand the nuts and bolts of the industry and to build up the expertise and the network to consistently conduct profitable deals. Good teams are able to buy “cheap” companies from a proprietary deal flow, to continuously and systematically add value via a hands-on approach and to extract the highest value of most of the portfolio companies.

*One of the biggest mistakes that I have made from a partnership perspective was to assume that a multiple number of Nobel prize-winners on an advisory board would mean anything in terms of return from the fund.*

Hanse Halligan, Fairview Venture Management

First, it is about the ability of the team to get access to the best deals, to structure the transaction and to negotiate the optimal entry prices. Dimensions that have to be taken into account are the experience gained in generating deals from various sources (proprietary deal flow or not) and the ability to negotiate and structure the best terms. Second, in most cases a portfolio company will not have sufficient resources to support and manage its development alone until the exit. The ability of the fund manager to fill in the gap and add value to its portfolio companies is an important factor for success. Finally, the ability of the team to extract the highest value out of a portfolio is critical. Has the team the experience and ability to attract numerous potential buyers and to sell the investments profitably?

Financial skills are also important; they might be gained while working as an investment banker doing private placements, high-yield transactions, M&A or IPOs or as chief financial officer in any companies, but preferably ones similar to the future portfolio companies.

#### 15.2.1.2 Operational experience

Indication for “operational experience” is that the managers have run companies similar to the one expected for the portfolio companies. Many companies, especially in their start-up phases, have insufficient in-house operational experience. This is one of the areas where fund managers can add significant value, either by providing operational advice or by helping the companies to reinforce their team via newly hired managers.

*Funds need people on board who can work with companies to improve them. These operational people must be an integral part of the team. Some teams use their network to provide operational*

*expertise, but we do not buy into that concept. Where is the incentive for an outsider to do the best job if they are not part of the team that is receiving the carry?*

Reinhard Hartl, Global Vision Private Equity Partners

#### 15.2.1.3 Industry sector experience

While buyout transactions are normally in mature companies in “old” industries, venture capital investments are in startup or developing companies focusing on new or quickly developing sectors. In both cases the fund manager experience in the targeted industry is essential. This sounds a bit obvious. Indeed, who would invest in a specialist biotech funds without any biotech expert in the management team?

*... if you are assessing a business strategy or the viability of a new technology, a good knowledge of that industry is going to be a plus. Secondly, if you have spent your life in an industry, then your personal relationships in that business are going to be stronger. That means the team is able to conduct their due diligence to a much better standard. The third point is that the team will make more informed valuation decisions: a food company is not necessarily a good investment. If it is a great company but you pay too much for it, then it could turn out to be a bad investment.*

Gus Long, Fort Washington Capital Partners

#### 15.2.1.4 Country/regional experience

When investing in a fund, investors like to see a team with close connections with the targeted countries or regions. This is especially true in Europe or any funds with an international focus, on diversity of cultures regulations, which can represent a serious barrier to enter networks or to properly structure transactions. The same observations as for industry experience also hold in this context. An in-depth understanding of a country’s culture, regulations and ways of working is essential for selecting and valuing investments and for structuring the transaction.

#### 15.2.1.5 Team size, balance and coverage

Market best practices often refer to a maximum of five companies per investment professional.<sup>5</sup> Investors are wary of teams where all skills are concentrated within few or even only one team member. Skills should be well balanced throughout the team, as the departure of any given member is less likely to result in a disaster. The fund should be able to invest further before having to expend valuable management effort in seeking out and recruiting additional key talent.

*Team members need to have complementary skills. We like teams that have people with some operational and/or consultancy skills, rather than just ex-investment bankers. I think that is becoming more and more important as the market develops. If firms are going to achieve good returns, then they will need to have the skills to transform business in some way.*

Roger Wilkins, Morley Fund Management

<sup>5</sup> Cumming (2003) analysed the question of the relationship between fund size and investment returns, based on information from 214 Canadian venture capital funds (1991–2000). VC funds that invested for 1 year only were excluded from the analysis. This study considers fund size as measured by the number of portfolio companies. The author’s findings suggest decreasing returns of scale in the factors that affect the number of investee entrepreneurial firms in the venture capital portfolio; there appears to be a trade-off between VC assistance to entrepreneurial firms in the VC portfolio and the size of the portfolio.

Diversity, in terms of skills, background, personalities and perspectives, is seen as an advantage. Diversity enables management teams to address a wider range of issues than would otherwise be possible, and to approach such issues from various angles, which generally results in fundamentally stronger decisions. Diversity is, however, not enough by itself. Management teams also should possess complementary skills and backgrounds. Complementary management teams are generally stronger and more effective than homogeneous management teams.

### 15.2.2 Management team stability

For assessing the management team's stability, one has to look for evidence that a team will stay together until the end of the fund's lifetime. Indeed, even for qualified teams there is the risk that members will leave or that tensions will block the team to make best use of its skills. Not only the team as a whole but also individual team members, especially those with key competences, need to be assessed. For assessing management team stability, a series of sub-dimensions could be analysed, such as team cohesion, historical stability, sharing within the team, succession planning or financial stability.

*We look for team stability. This is very important at the moment, especially on the venture capital side. Many groups are facing an enormous amount of stress after the ups and downs of the past three to four years. You have to be really careful and ensure that you really understand the dynamics of the team.*

Chris Manser, Winterthur Group

#### 15.2.2.1 Cohesion of the management team

The existence of clear roles and responsibilities will normally decrease the potential tensions within the team. Furthermore, teams that get along, are cohesive, work well together and are effective in their decision-making and their actions, have a much higher likelihood of success. Indeed, discord among management team members is a primary cause of failure.

*One of the most important things we look for is a genuine team in which decision are reached together. You need team decisions to moderate the opinion of individuals.*

Xavier Caron, CPR Private Equity

#### 15.2.2.2 Historical stability

Most of the time, investors base their investment decisions on the skills of some key persons. The historical staff turnover and the length of the working relationship give indications for the team's stability. Staff departures may signal tensions within the team and, therefore, should be systematically investigated. The fact that a team is raising money for the first time should not kill a deal, as long as they have been working together for an extended period.<sup>6</sup>

<sup>6</sup> Burgel & Murray (2000) could not accept the hypothesis that experienced private equity partnerships—as opposed to first-time funds—will achieve higher returns than new partnerships. They offer as a possible explanation that successful venture capitalists might find that they maximise their financial rewards by setting up new funds, rather than by continuing to work within their existing partnership. Therefore, they would not really be first-time funds, as they have substantial experience. Being able to raise a new fund in the first place might therefore already constitute a significant survivor bias: only if perceived as outstanding professionals by potential investors can one raise a first-time fund.

### 15.2.2.3 Sharing within the team

The existence of unfair (or perceived to be unfair) financial packages (salary, carry, ownership of the management company, etc.) regularly leads to problems. Normally, the team member's financial package should reflect the expected member's contribution or added value to the fund. Often, during the lifetime of a fund, junior team members emerge as the "rain-makers". If they are not properly compensated through increased status or additional financial rewards, this can create severe tensions. This situation is all too common, as the high number of spinouts—where junior team members try to set up their own venture firm—demonstrates.

*Carried interest must be distributed in a fair and sensible manner to ensure that the general partners remain at the firm for the foreseeable future. We find that the founders of some firms are not willing to share the carried interest with the rest of the team or do not share them fairly. That can cause problems with the staff retention and can create frictions in what is meant to be the team effort.*

Harold Weiss, Swiss Re

### 15.2.2.4 Succession planning

In this context, one has to pay attention to any potential succession issues and to the existence or non-existence of succession plans that open the way to the rising managers.

*Some of the investments with established, premier names may not be as reliable as we would have expected. We are witnessing a period in which firms are facing succession issues and are relying on members of the team that may not have wealth of experience of their more senior partners.*

Chris Manser, Winterthur Group

### 15.2.2.5 Financial stability

A management company will be able to deliver the expected performance only if it is financially viable and, therefore, able to keep all the key staff members. Therefore, a budget review has to be performed to verify that the foreseen management fees will be sufficient to cover all foreseen expenses of the management company and that these expenses are reasonable.

## 15.2.3 Management team motivation

A review of the alignments of interests forms the basis for assessing the team's motivation. This point is important, as the management team will have to properly manage the fund in the investors' interests and for the whole life of the fund. For assessing the management team motivation, a series of sub-dimensions could be analysed, such as incentive structure, reputation, team independence, outside activities, conflicts of interest or the managers' investment into the fund.

### 15.2.3.1 Incentive structure

Management fees should only be sufficient to cover the costs of the structure. Where management fees are too high, they can become the key motivation for the team. A surplus

could be acceptable, but only if it is not distributed and kept in reserve, e.g. to reduce the pressure to raise a follow-on fund. When assessing the adequacy of the management fees, investors have to consider all the sources of income (e.g. fees from other funds or fees from the portfolio companies). They need to compare the adequacy of the salaries against the market. Incentives should be mainly performance-based and teams should focus on the carried interest.

*Many of the large funds are raising a large amount of money and are charging the same percentage of fees as when they were much smaller, even though the headcount hasn't risen substantially. They are able to make themselves very wealthy without achieving out-performance.*

Roger Wilkins, Morley Fund Management

### 15.2.3.2 Reputation

Reputation is an important factor for assessing team motivation. A team without reputation may have a significant incentive to quickly establish a “track record” and, therefore, could make too “early” exits or take higher risk in order to increase the probability of “highly” successful exits. Similarly, a management team with a well-established reputation but close to retirement could either be complacent or act opportunistically and “gamble” to do a last highly successful deal.

### 15.2.3.3 Team independence

EVCA differentiates funds according to their degree of independence from third parties:

- *Independent fund*: “one in which the main source of fund-raising is from third parties”.
- *Semi-captive fund*: “a fund in which, although the main shareholder contributes a large part of the capital, a significant share of the capital is raised from third parties”.
- *Captive fund*: “a fund in which the main shareholder of the management company contributes most of the capital, i.e. where parent organisation allocates money to a captive fund from its own internal sources and reinvests realised capital gains into the fund”.

Investors normally favour independently managed funds where investment decisions are either taken by the management team or a board where members are independent from investors. The presence of a large, sponsoring investor does not necessarily mean a lack of management independence. The key issues are the decision-making process and the power to change the “rules of the game”. Also, the allocation of carried interest is a key test. Independent teams usually receive most, if not all, of the carry, and limit the scope for conflicts of interest with the sponsor. When investing in a semi-captive or captive team, the limited partners should ensure that proper covenants are in place to manage conflicts of interest with the sponsoring investor, and that a like risk-like reward remuneration profile applies.

### 15.2.3.4 Outside activities

As the management of a private equity fund is highly demanding and time-consuming, team members should limit outside activities to those that have an expected direct benefit for the fund. Outside activities are, for example, board seats, private investments or the management

of the previous or follow-on funds. Furthermore, outside activities can have a negative impact on the motivation vs. the fund when, for example, the expected financial outcome from these activities is higher than that from the fund.

#### 15.2.3.5 Conflicts of interest

The sources of conflicts of interest are numerous. Here, one has to pay attention to those that could lead the management team to take decisions not in the best interests of the limited partners. For example, in case of follow-on fund, one will have to pay attention to the follow-on investment in previous funds' portfolio companies or to the allocation of the investments between the two funds.

*We are very hot on picking up conflict of interest issues. One thing we do not like, for example, is an early stage fund selling on an old portfolio company to one of its successor funds.*

Rolf Wickenkamp, CAM Private Equity

#### 15.2.3.6 Managers' investment into the fund

As we discussed in the context of fund structuring, investors feel more confident about the management team's dedication and motivation when the members are financially committed to their fund's success or failure. The team members' capital commitment is adequate when it will induce an alignment of interests in all situations. When the performance of the fund is poor, the other incentives structures, such as the carried interest, will provide no motivation. Having invested a significant share of their personal wealth will force fund managers to continue searching for solutions to rescue the fund.

*We are looking for GP that have sufficient love of the business and conviction in their abilities to invest a significant portion of their net worth in the fund. If they are not investing their own wealth in their own fund, then we'd like to know where they are putting their money that will give them a better return—we'd like to invest there too.*

Mark Weisdorf, CPP Investment Board

### 15.2.4 Fund strategy

When investing into a fund, investors buy not only management skills but also an investment strategy. Indeed, a highly skilled management team does not always deliver high performances. For assessing the fund strategy, a series of sub-dimensions could be analysed, such as deal flow strategy, hands-on approach, investment focus, fund size, exit strategy or overall strategy fit.

#### 15.2.4.1 Deal flow strategy

Ideally, a team can generate a proprietary deal flow and avoid auction-like situations. Among the indications for proprietary deal flow are:

- List of contacts, such as universities, large corporations or entrepreneurs.
- Being the sole or lead investor in the first rounds of financing.
- Evidence that the team's reputation attracts deals.
- Evidence that the team can add value and, therefore, has a competitive advantage.



#### 15.2.4.2 Hands-on approach

A hands-on approach is of particular importance in venture capital. Evidence for a hands-on approach could, for example, be:

- Board position in each portfolio companies.
- Support provided for the definition of the strategy, the recruiting of key employees, fund-raising, etc.
- Lead role in round of financing.
- For each portfolio companies, several rounds of financing with clear milestones defined.
- Presence of local offices.

#### 15.2.4.3 Investment focus

To deliver good performance, the targeted industry sectors and geographical regions have to offer sufficient investment opportunities that are expected to generate a private equity-like target rate of returns. A too-wide orientation, although apparently increasing the potential deal flow, is often not positive, as it will be more difficult for the team to implement a hands-on approach. One has to verify that the team's strategy is adapted to the specificities of the targeted sector.

*We are very wary of committing to funds with a very narrow investment focus—they generally end up having to do deals that fit their focus rather than seeking out the best deals and it gives you a very poor diversification.*

Roger Wilkins, Morley Fund Management

#### 15.2.4.4 Fund size

The size of a fund has to be in line with its strategy.<sup>7</sup> Notably, when analysing the fund size, one has to take into account the stage focus (later stages require normally more capital), the geographical focus (Pan-European funds normally require multiple locations or mobility), the sector focus (biotech investments are usually more capital-intensive) and finally the evolution of the size compared to the previous funds.

*There is a temptation among many funds to continue increasing the size of their funds and the number of people in their team and that can have an impact on quality of deal selection and returns. It's just the same as a small company that grows too quickly—it is difficult to control the organization, to delegate enough and develop internal systems to cope. And so these are the type of funds that we would evaluate carefully.*

Roberto Pilotto, PPM Ventures

---

<sup>7</sup> Burgel & Murray (2000) took a look at the fund size in terms of the amount committed. The analysis is based on 134 UK VC and private equity funds set up between 1980 and 1994 and examined the impact of fund size and investment preference on the net returns. The authors found substantial scale effects for funds in the buyout and non-technology venture segments of the private equity industry. For non-technology funds, the performance of early-stage VC funds was more sensitive to scale effects than the performance of later-stage (MBO/MBI) funds. However, the fund size may be a consequence of success rather than a contributor to it. Successful fund managers can subsequently raise larger new funds at more advantageous terms than their less successful peers. The results suggested that the performance of technology funds is insensitive to scale. The authors conclude that, given skilled investment managers, technology funds can be viable irrespective of their fund size. This would be consistent with the findings in Cumming (2003); managerial resource rather than size appears to be the key discriminator for the success of specialist funds.

#### 15.2.4.5 Exit strategy

When reviewing the exit strategy, one has to consider the way the managers invest, monitor and manage their portfolio companies in order to optimise exit conditions. Has the team added value to provide during the exit process, such as previous experience in trade sales or IPOs? Good strategies are based on:

- Investment decision with clear identification and assessment of possible exit routes.
- Monitoring and management focusing on value drivers perceived by the potential buyer and on increasing the chances for exits (e.g. suppliers or clients are often potential buyers).

*I do not think that most firms focus enough on exits. This is evidenced by the fact that this usually is the area on which we receive the least information from firms where we are conducting our due diligence—whereas in fact, it should be one of the most important fields for firms to show their expertise. We look really closely into a firm's exit capability. It is all very well to show the IRRs and performance, but we need to drill down and see whether the team has had a clear vision about where they were going to achieve realisations. From this exploratory work, I would have to say that we have encountered very few that have a real and clear exit strategy and that have the ability to exit in the best possible way.*

Brad Heppner, The Crossroads Group

#### 15.2.4.6 Overall strategy fit

Finally, the overall strategy has to be assessed. Obviously, the best deal flow strategy, that allows a team to make ideal investment, can only be successful if the management strategy and the exit strategy are consistent. When the overall strategy is assessed, it is highly important to analyse the evolution over successive funds. No evolution is as bad as too many changes. Indeed, any drift should be properly justified and, when unchanged, the validity of the strategy should be checked. Special attention is required for follow-on funds when there is a significant fund size increase, which could lead to a risky strategy drift, such as doing larger deals or deals outside the core competencies.

*We avoid groups that have changed their strategy . . . They may have a good reason to have done that and if they can articulate that in a way that makes sense to us, then we will consider them. But we have seen that when a fund diverges from its previously successful strategy, it often goes wrong.*

Hamish Mair, Martin Currie

### 15.2.5 Fund structure

The fund structure defines the framework in which the fund will evolve. The review has to verify that the structure is adequate and that it is not too costly for the investors. For assessing the fund structure, a series of sub-dimensions could be analysed, such as compliance with standard terms and conditions, cost of the structure or corporate governance and internal procedures.

#### 15.2.5.1 Compliance with standards

Often, investors define standards that are in most cases adequate to align all interests with an optimised cost–benefit ratio for most of the transactions. However, in some special situations,

such standards are not always ideal and alternative solutions will have to be put in place. Furthermore, as the fund terms and conditions are negotiated, it will depend on the “balance of power” between the investors and the fund managers. When the market favours of the fund manager, terms and conditions can deviate significantly from perceived standards.

#### 15.2.5.2 Cost of the structure

Most of the funds are structured with set-up costs, management fees, hurdle rate and carried interests. These elements have an impact on the final performance. This can be evaluated by calculating the minimum portfolio performance needed in order for the investors to break even, i.e. when the fund produces neither a gain nor a loss, or, in other terms, when the investor’s net IRR is equal to 0%. The break-even IRR can be taken as a yardstick for assessing the structure’s cost.

#### 15.2.5.3 Corporate governance

Poor governance, coupled with an ineffective legal system, often has a negative impact on a private equity fund’s performance. Best market practices in matters of corporate governance cover disclosure requirements, relationship to investors, promotion of transparency, respect of the principle of independence and separation between the management and the control bodies (such as the boards of directors, supervisory boards, investors committees, audit committees) or the annual investors meeting.

In the context of transparency, the fund’s reporting is the main source of information on performance and operational status. Investors should at least require the fund to comply with the applicable market standards, such as the EVCA reporting guidelines. Generally, the overall fund organisation and its procedures are good indicators of the quality and the professionalism of a team.

### 15.2.6 External validation

Apart from a fund management team’s reputation, a series of sub-dimensions could be taken into account for validation, such as the previous funds’ track record analysis, the performance of comparable funds, the quality of the co-investors or the recurrent investors.

#### 15.2.6.1 Previous funds’ track record analysis

Although the success of a team in the past is not a perfect indicator of its success in the future, the fact that a team has been unsuccessful is probably a good indicator of future failure. The analysis of the track record is traditionally done via a benchmarking. Its objective is to judge whether the drivers for success in previous funds are applicable for the future, taking changes in the market into account.

*Looking at the track record of private equity managers we always ask: what is it about that GP that has enabled them to outperform in the past and what gives us confidence that they will be able to continue outperforming?*

John Greenwood and Stuart Waught, TD Capital

### 15.2.6.2 Performance of comparable funds

When a team has no track record, the historical performance of comparable funds may give an indication of the quality of an investment proposal. Looking at comparables is a common approach used to compensate for lack of information in a highly uncertain environment. As in private equity it is not always easy or possible to identify fully comparable funds, the challenge then lies in analysis of the differences and of their potential impact.

*We do a lot of assessments of a fund's track record, but we break it down and analyse each individual deal that have been made. You can really judge a fund's track record by analysing each individual deal in detail and double-checking all our findings with numerous reference calls.*

Christopher Bodtker, Lombard Odier Darier Hentsch & Cie

### 15.2.6.3 Quality of the co-investors

The private equity experience of the co-investors in the fund is an efficient way to validate a judgement on a specific transaction. Here it is important to form an opinion on their skills, motivation, financial strengths and also general approach to investments in private equity. Research from Lerner, Schoar & Wong (2004) suggests that different investor classes are not equally successful in their fund selection efforts over the years. Some institutions may also invest in a fund for non-economic “strategic” reasons, such as to get access to co-investment opportunities. They may also pursue the opportunity as a niche investment in their overall portfolio strategy. Furthermore, the other limited partners’ financial strength is an important factor to assess the risk of an investor’s default. This assessment is obviously difficult when no investor has yet made a firm commitment or even where no other investor has been identified

### 15.2.6.4 Recurrent investors

Because the private equity market suffers from a severe information asymmetry, investors have to base their investment decisions not only on screening but also on the interpretation of market signals, such as the fact that investors in the previous funds will invest in the current one. Such investors have access to inside information on the previous funds, and are better positioned to assess the quality of the proposal and of the management team.

## 15.2.7 Overall fit

The scoring cannot only be an assessment of the various pieces of a puzzle. Very often the assessment of various dimensions will not be clear-cut and therefore requires taking a look at the investment proposal’s “big picture”. The overall fit of all these components is essential, notably the fit between the team and the fund strategy, but also that between the fund structure and the fund strategy.

Finally, if too many dimensions cannot be assessed or too little evidence is found in the course of the due diligence, this lack of completeness can set limits to the overall qualitative score assigned.



## Grading-based Economic Model

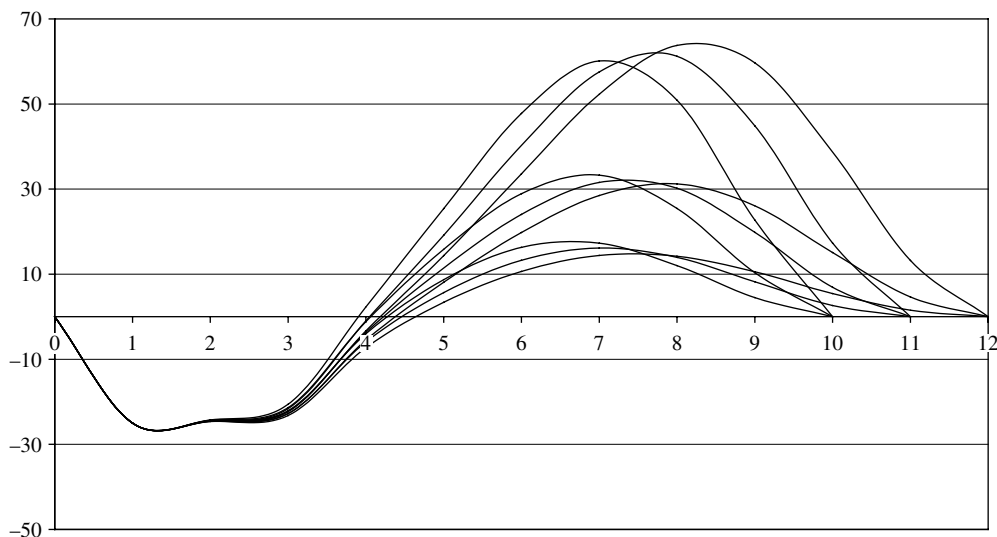
In the previous chapters, we described a grading system for private equity funds. Based on this methodology, funds are classified as expected first- to fourth-quartile position within a benchmark peer group. In this chapter we explain how these grades can be used in order to estimate a private equity fund's economic value. Essentially our valuation approach is based on two techniques widely applied in corporate finance in general: comparables and discounted cash flow analysis. The grading system is used to find the comparable funds and the characteristics of these comparables are then used as input to model scenarios for the private equity fund's likely cash flows. We have called this approach the Grading-based Economic Model (GEM). While existing bottom-up approaches (see Chapter 11) to derive a "fair value" for private equity funds are based on the assumption that a fair value is available for all portfolio companies, the GEM only requires comparability between funds. It therefore would give a fund's fair value even if individual portfolio companies were valued in accordance with "traditional" venture capital valuation guidelines with their usual conservative bias.

### 16.1 APPROACH

Our valuation approach starts by recognising that limited partnership shares can be valued the same way as any other investment—by comparing, after adjusting for the time value of money, the cash outflows with the cash inflows. The timing and amplitude of the fund's cash flows are random but follow a very distinctive pattern that can be modelled.<sup>1</sup> In the absence of an efficient market, we cannot mark-to-market and have, therefore, to mark-to-model. To model future cash flows, we need a dataset from funds similar to the one we want to value. The patterns can be derived from a library of cash flows or from a descriptive model like the one developed by Takahashi & Alexander (2001), also known as the "Yale model" (see Chapter 10). For both approaches the input has to be consistent with the grading class of the fund to be valued. As all modelling is based on numerous assumptions, it requires management judgement and the GEM's results obviously depends on the quality of these assumptions. Generally, models should be rather simple, avoid too many assumptions, and give as much evidence as possible to support them. While no model will directly give a precise answer, it aims to give a meaningful range for a private equity fund's value. Furthermore, the consistent use of the model as well as regular calibration with market data should allow improving the accuracy of the valuation over time.

---

<sup>1</sup> See Tierney & Folkerts-Landau (2001) or Takahashi & Alexander (2001).



**Figure 16.1** Cash flow scenarios pre-investment

For long-term investments, one way of dealing with the variety of possible outcomes is through a set of meaningful scenarios<sup>2</sup> (see Figure 16.1). Several scenarios, from a worst case to a best case, with two or more scenarios in between, can be used for cash-flow projections.<sup>3</sup> Here we primarily address the question of how to determine a fair value for a fund (see Box 16.1, Superior selection skills). For this purpose we do not assume that a certain scenario is more likely than another and base the cash flow projections on historical patterns.

#### **Box 16.1: Superior selection skills**

The methodology we described in Chapter 15 allows a ranking of fund proposals according to the qualitative scores. Does this mean that this ranking reflects the attractiveness of investment proposals and therefore should be the sole basis for investment decisions? As a “health warning”, the answer to this question is clearly “no”. It has to be kept in mind that we restrict our discussion on expected performance grades to the context of “fair value”. In the absence of efficient markets for private equity fund shares, fair value is a somehow artificial construct. We interpret the idea of a fair value—“*the amount for which an asset could be exchanged or a liability be settled between knowledgeable, willing parties in an arms-length transaction*”—as a consensus opinion of market players. Consequently, any valuation needs to be backed up with as much commonly available data and agreed assumptions as possible. The qualitative scoring we proposed aims to model the consensus of players in the private equity market.

<sup>2</sup> The appropriateness and consistency of the scenarios need to be reviewed by a valuation committee. Best practices for valuation committees suggest periodical meetings with investment managers, discussion of valuation issues, written valuation policies, minutes reflecting discussion, decisions and actions.

<sup>3</sup> The number of scenarios depends on the number of peers available.

As in this opaque environment reliable and up-to-date information is scarce and market players agree on relatively few points, the qualitative scoring allows only differentiation into relatively broad categories. Moreover, the apparent lack of precision regarding the pre-investment grading is caused less by the lack of superior selection skills than by the uncertainty regarding the final peer group composition and the need to make the investment decision under uncertainty, as the access to the potential top-performers is restricted. Sub-standard funds do not get closed and the bottom performers are more likely to drop out of the market.<sup>a</sup> As a result, based on the qualitative scoring, at least the group of institutional quality funds will appear fairly homogenous. The majority will, to a high degree, comply with best market practices and show “mainstream characteristics”. Certainly there will be some first-time teams, “strategic investments” in the widest sense, or some “niche” investments, but they will by definition be the exceptions.

*Institutions tend to select real estate, venture capital, and leveraged buyout funds from an easily identified list of acceptable alternatives, suggesting a coherent definition of any given year's institutional cohort.*

Swensen (2000)

Good investments, however, are often based on disagreement with market consensus, exploitation of inefficiencies and more detailed or up-to-date information. Therefore, investment decisions will be based on other rankings reflecting an investor's research—aiming to tackle the “knowable unknowns”—and views or hunches on market developments. An investor also has to take a fund's real option value into consideration. We will discuss this point in more detail in Chapter 22. While it is comparatively straightforward to filter out the clearly unsuitable investment proposals and to determine the “institutional quality” teams, the “grey area” in between poses challenges and opportunities for investors to stay ahead in the game. In fact, it is one of the major attractions of this asset class that innovation and occasional technological breakthroughs—such as the personal computer or the Internet—have the potential to radically change the industrial or the consumer landscape. No statistics can describe this. In an uncertain environment fund managers and investors alike are faced with a dilemma: high compliance with mainstream characteristics is highly likely to lead to average performance, and in periods of market disruptions even to substandard performance. The degree to which the market is willing to deviate from mainstream criteria may be interpreted as a measure of how much change the market anticipates.

As real option values cannot usually be determined with sufficient precision, because there is usually little consensus on the underlying assumptions, and as real options often cannot be transferred from one investor to another, we do not see this value as relevant for a “fair” valuation. Nevertheless, investment decisions have to address this uncertainty.

For this purpose, of course, a scoring methodology can again be a useful instrument to assure a structured and disciplined approach to decision making. This scoring methodology would often rely on insights not known and assumptions or opinions not shared by other market players and consequently cannot be covered in this book. Admittedly, it appears slightly odd to use two different methodologies (one for “fairly” valuing a

<sup>a</sup>See Sormani (2004c): “There are almost 200 funds in Europe fund-raising at the moment, but not all of them will succeed. According to Almeida Research, there were 37 fund closes in Europe last year and it is a fact that only a small proportion of the funds that are in the market actually ever reach a final close”.



fund and one as the basis for investment decisions) in parallel, but it is in line with approaches used elsewhere in the investment industry. For example, in the fixed income area, asset managers often do more in-depth research to anticipate changes in the ratings assigned by external rating agencies or to identify inefficiencies, e.g. where “official” ratings are more pessimistic. Another analogy is with public equity, where you have a fair market price and an analyst valuation. The fair market price is used for accounting purposes, while the analyst valuation is used for the investment decision. Here valuations for accounting purposes are based on market data, while investment and trading strategies are built on—perceived—superior knowledge.

We conclude that to have superior selection skills in the private equity fund sector, an investor must have at least the following capabilities:

1. The ability to predict the peer group, i.e. being able to project what funds are going to close.
2. To know the characteristics of the funds represented within the peer group.
3. Better valuation techniques to be able to rank within this peer group.<sup>b</sup>

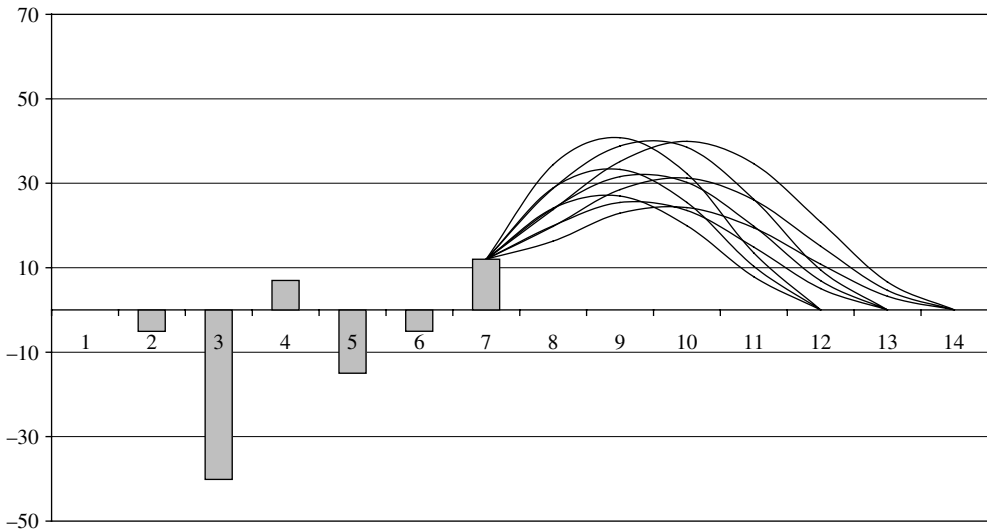
Superior selection skills require an active approach to identifying above-average teams. Instead of getting flooded with private placement memorandums from aggressive fund managers or placement agents, it is critical to continuously screen and evaluate the fund-raising market. Based on this information, an investor can compile a calendar of top-quality funds that are expected to fund-raise and of likely spinouts of potential star managers trying to set up their own firms. Only early and continuous contact can assure access to these funds.

Establishing a calendar for investment activities requires compiling a list of funds likely to be fund-raising and a mapping-out of the sectors the funds are likely to focus on. Then a rough allocation has to be done of how much is to be invested in each sector. The investor has to assign relative performance expectations based on comparison against other managers on the market, even if only an in-depth due diligence later on can confirm this. A target portfolio comprising a list of fund managers, with planned and possible commitments based on relative performance expectations, has to be designed. Finally, “wish list” funds need to be identified, and a contact with them has to be established. Monitoring the market for future commitments is the key to making superior investment decisions.

<sup>b</sup>As the peer group funds’ characteristics are to some degree negotiable, such a ranking will not always be possible pre-investment.

Over time and with new information, the projected outcomes are converging (see Figure 16.2). After discounting a range of plausible cash flow scenarios, a fund’s economic value can be calculated, which is equal to the average of values over all scenarios.

In line with the approach generally followed for equity investments, a fund’s valuation is not done in isolation but is based on the evaluation of its key characteristics against those of its peer group. The GEM approach for valuing a private equity fund has two stages: first, the relative position of a fund within the peer group is determined through the grading methodology; and second, the projections based on the long-term data of the basket of the peer group funds with similar relative positions after adjusting for the fund internal age (see below).



**Figure 16.2** Cash flow scenarios mid-lifetime

We identified the ability to pick the best funds as one of the key performance drivers for a private equity investment programme. As the quality of the vintage year is usually seen as unpredictable for venture capital, we assume that an investor does not attempt to time the market but aims to participate in the top funds in every vintage year cohort. Does an expected first quartile performance grade assure that we have really picked the highest performers within the peer group? Top-graded funds are those that carry the highest performance expectations and that are therefore considered as the most desirable from the viewpoint of an investor. As the first quartile historically has given an above 30% annual return, does this mean that for a top-graded fund the limited partner can now reckon that such an investment is worth far more than its cost right away? Obviously not, but why is this so? For example, we clearly need to take the age of a fund into consideration. The younger a private equity fund is, the less certain we are about its expected performance.

## 16.2 INTERNAL AGE ADJUSTMENT

At the end of the fund's life a grade is unambiguous, as it corresponds to the final IRR and its position within the benchmark. In Chapter 13 we introduced the "internal age" to model a fund's life cycle and need to reflect this factor in the scenarios. For a fund with internal age approaching 1—meaning it is close to the end of its lifetime—the basket of funds that historically performed in the quartile consistent with the fund's grading can give a reference. The question is, what "precision" has the grading for a fund with internal age 0, i.e. pre-investment? If we can answer this question, we can simply interpolate between these extremes to approximately determine the bucket of comparable funds for any fund with internal age between 0 and 1. For a young fund the spread between possible scenarios is clearly wider than for a fund that is close to the end of its lifetime (see Figures 16.1 and

16.2). We have to compare funds against funds in the same stage of their life cycle and therefore need to adjust for the fund's internal age.<sup>4</sup>

For a more detailed discussion of this question, please refer to Appendix 16A. We come to the conclusion that, for a private equity fund which—based on the qualitative score assigned pre-investment—is assessed as “top”, only the average performance of the overall market can be expected. This may be slightly puzzling and even disappointing, as significant effort is spent on the due diligence. However, this cannot come as a complete surprise. Pre-investment a fund's grade expresses a ranking derived from historical evidence. At the end of the day all market players go through a similar process and aim to select the best funds. Characteristics obviously indicative for substandard performance become less likely for the new peer group, while criteria associated with top-quartile performance evolve into the “mainstream”.<sup>5</sup> We conclude that the overwhelming majority of new funds coming to the market will most likely resemble historical top-performers, while only in rare circumstances may they have the characteristics associated with sub-standard performance. Moreover, the grading is derived from different peer groups. A fund management team that came out at the “top” in one vintage year may have had weaker competitors or simply luck. Just for this reason, historical first-quartile returns cannot systematically guarantee a repeat performance. This should serve as a warning against relying on the typical “mechanistic” approach of investing in the follow-on fund if the current fund appears to be “top”.

### 16.3 PRIVATE EQUITY FUND IRR PROJECTIONS

Based on the previous arguments, we start with the assumption that for a private equity fund with a top grade pre-investment only a market average return can be expected, and therefore the whole population of the benchmark initially forms the reference basket. By definition, the few low-quality funds that will manage to find a sufficient number of investors and start their operations are generally expected to come out at the bottom of the statistics. The GEM is based on two assumptions:

1. The qualitative scoring measures the deviation from mainstream and therefore is indicative for the probability that the fund will perform in line with the market or that it will show lower performance.
2. Uncertainty also applies post-investment. As different investors see uncertainty differently or have different attitudes towards uncertainty, the composition of the entire peer group population remains unclear over a protracted time period, and this uncertainty will only decrease over time. Simplistically, we assume that the risk is indicative for the uncertainty and that the uncertainty reduces proportional with increasing fund age.

Given the limited sample size and the informational inefficiency of the market, the “degree of inferiority” is difficult to measure.<sup>6</sup> We have far fewer examples for funds that did not

<sup>4</sup> This approach is similar to the typical multiple-based technique used by venture capitalists, where a publicly quoted company is used as comparable and it is estimated how many years the start-up is away from this stage. This future market valuation of the start-up is then discounted in line with the project period (see White, 1999).

<sup>5</sup> The changing attitudes towards first time teams could be viewed as one example. At the late 1990s “bubble period” some investors expressed the belief that first-time teams were “hungrier” and therefore would be better “bets” than established firms. During the downturn of the VC market, first-time teams appeared to experience a higher “mortality”, resulting in a “flight to quality” where institutions become unwilling to consider proposals from new teams. In most recent due diligence questionnaires we are aware of, “first-time team” is seen as a negative criterion.

<sup>6</sup> Of course, such a grade is far more judgemental than assigning a top grade to a fund that closely corresponds to a relatively large set of “institutional quality” funds and may also explain why there is no risk-adjusted pricing in private equity.

work out, and our failure prediction will be based on “interpolation” from previous cases that were unsuccessful, rather than on clear statistical evidence. In the extreme we have no example at all. As an illustration, assume that in 2004 you are confronted with a proposal for a specialist fund focusing on the “new and exciting opportunities in quantum computing”. The technology has been widely discussed in various scientific journals; apparently the concept has been proven in laboratories, and even some novels have already been written, in which the heroes battle with quantum computers. So the proposal appears to have its merits—at the end of the day this is what venture capital is about. Of course, there is no realised VC fund in any database that in the past had focused on quantum computers, and a “proof” that this is unlikely to work out at this point in time is not possible. However, one is able to draw parallels to funds that focused on technologies in a comparable development stage, ranging from supercomputers during the 1980s to, say, nanotechnology since the beginning of 2000.

We can now use a series of scenarios with IRRs consistent with the grade assigned as inputs for a model to project cash flows. The approach outlined in Appendix 16B has the following characteristics:

1. It is self-adjusting, as new benchmark data and new interim IRRs are captured. With increasing internal age the projection range gets narrower and converges to the final IRR.
2. If the discount rate is set as the average private equity return observed in the market, the up-front valuation—as one would expect—equals cost.
3. Only if expected performance grades are updated are they factored into the projections.

A quantification of a private equity fund’s grading cannot be precise and there are limitations to valuation or forecasting. These problems are caused by the characteristics of the asset class itself, and are not matters that will be sorted out once better and more data are widely available. Especially in venture capital, precise long-term projections are farcical and, as Keynes suggested, *“I would rather be vaguely right, than precisely wrong”*.<sup>7</sup> We believe that the imprecision of the approach does not matter in practice, as it stimulates the right investment behaviour and, as at portfolio level, the funds’ imprecisions will on average compensate each other and, over time, the imprecision will shrink.

## 16.4 EXPECTED PORTFOLIO RETURNS

Long-term investors in private equity are concerned about the terminal wealth rather than the ups and downs of interim performance during the holding period. The variability of outcomes after a long investment period is referred to as “terminal wealth standard deviation” (TWSD). Radcliffe (1994) proposed the TWSD to measure the spread of terminal wealth available to investors with long-term goals.<sup>8</sup> This measure is often used for hedge funds-of-funds<sup>9</sup> and has been discussed by Rouvinez (2003a) for private equity funds. Underlying this is the

<sup>7</sup> See Flag Venture Management (2002a): *“We believe in the importance of the managers being as ‘approximately right’ as possible in valuing their portfolios”*.

<sup>8</sup> For funds-of-funds the mean (terminal wealth average, TWA) and the TWSD of the end-of-period wealth accumulated from an investment in funds are often used as reward and risk indicators. Simplistically, one could look at the reward–risk ratio (TWA/TWSD) as measure for the expected average terminal wealth per unit of risk taken for evaluating the performance and risk properties of fund-of-funds. So far this risk measure is mainly used in the context of the US mutual fund and the UK property market (see Moultrup, 1998; or Hsu & Wei, 2003). This TWSD statistic measures the standard deviation of the terminal wealth levels of a portfolio of funds, where wealth levels assume a fixed initial investment that is valued over the duration of the holding period.

<sup>9</sup> See Brands & Gallagher (2003) for an analysis of a fund-of-hedge-funds’ mean return/return variance/TWSD as a function of the number of funds in the portfolio.

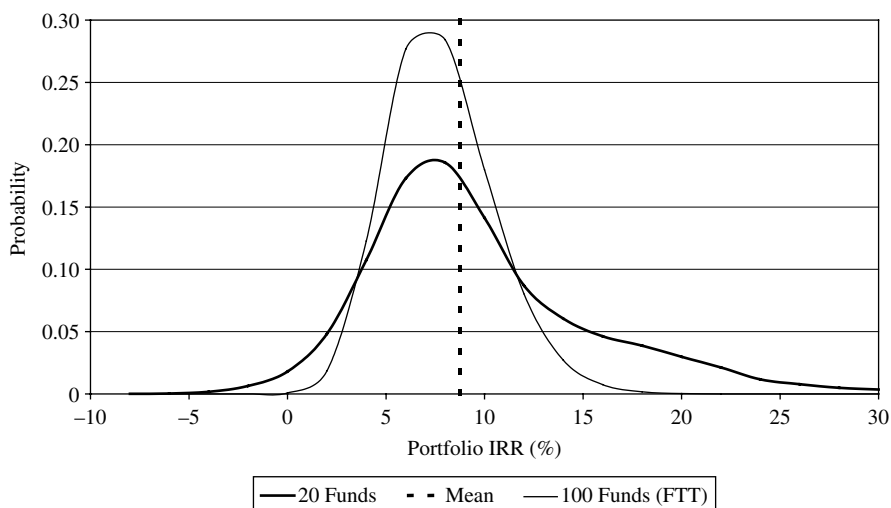
assumption that averages over time and averages over populations are equivalent. Various analyses conclude that longer investment horizons lead to a reduction of risks. However, in the context of portfolios of private equity funds' TWSD this conclusion cannot be drawn, as here the individual funds have different remaining lifetimes and after one fund is fully realised, the portfolio would need to be replenished with an equivalent fund. Moreover, the terminal wealth dispersion for the overall committed amounts depends, as discussed in Chapter 10, on how undrawn commitments and repayments are invested.

Instead we look at the private equity fund portfolio's lifetime IRR as the basis for measuring investment risk and return (for a discussion of the various risk measures, please refer to the case study in Chapter 9). This view assumes that the portfolio is in "run off", i.e. no further funds will be added to it in the future; essentially the investment horizon is limited by the fund with the longest remaining lifetime. It is also assumed that the limited partner always has the liquidity to honour the capital calls.

The most common approach to determine the portfolio's lifetime IRR is to calculate the pooled IRR, which is obtained by combining all funds cash flows and residual values together as if they were from one single fund.

Figure 16.3 gives two examples for a portfolio's pooled IRR, one for a portfolio diversification level of 20 and one for a diversification level of 100 funds—based on Thomson Venture Economics (VentureXpert database); simplistically the same commitment size for each fund is assumed.<sup>10</sup>

The portfolio's NPV can be determined through a Monte Carlo simulation. At each run one scenario for each fund is drawn randomly and, by aggregating the funds' cash flow, a portfolio NPV scenario is calculated based on the aggregation of the funds cash flows discounted accordingly. Then the portfolio's NPV is obtained by taking the average over all scenarios.



**Figure 16.3** Forecasted lifetime portfolio IRR

Source: Our own simulations, based on data from Thomson Venture Economics (VentureXpert database).

<sup>10</sup> It also visualises the peril of over-diversification. With increasing diversification level, the distribution curve becomes symmetrical and skewness is lost. The figure suggests that the benefits of increased downside protection do not compensate for the loss in upside potential.

**Table 16.1** Impact of new information on valuations

Type of information	Impact
Cash flows data, i.e. drawdowns and repayments	Interim IRR Internal age Expected performance grade
Quarterly reports	NAV Interim IRR Internal age Expected performance grade
Quarterly benchmark data update	Peer group Expected performance grade
Monitoring observations	Expected performance grade
Assessment of economic environment	Fund's expected lifetime
Market data (risk-free yield curve, market risk premium or beta)	Discount rate

There are several factors than can affect the scenarios at the fund level and also lead to a change in the overall portfolio's NPV. Cash flows, monitoring observations or market data can be observed frequently, and in theory a "VaR" like measure could be calculated on this basis.<sup>11</sup>

## 16.5 DISCUSSION

As we argued in Chapter 7, the methodologies used to determine the economic value of a private equity fund have a lot in common with techniques used in the area of credit risk assessment. In the last chapters we have outlined a prototype grading system as a simplified and robust approach to present an alternative way of modelling funds. We were just describing this approach in principle, and further refinements are possible. We conclude the description of the GEM with the discussion of two points:

1. Can this approach, especially the qualitative scoring, be "proven"?
2. Are there too many assumptions?

### 16.5.1 Verification of approach

Certainly, verification of the grading approach has its limits.<sup>12</sup> Due to the immaturity, the opaqueness, and newly evolving technologies and business models, there is too little empirical data to refute or accept any hypothesis. Instead we focus on aspects that, based on experience or common sense, have or may have an adverse impact on a fund's performance, and aim

<sup>11</sup> The workload related to the collection of the required information and reviewing the model assumptions can be heavy. Each private equity fund needs to be considered separately. This therefore requires an efficient set-up of the monitoring process.

<sup>12</sup> As the qualitative scoring in the context of "fair value" aims to reflect a consensus opinion, theoretically there should be a relationship between the scores assigned and the success rate or the length of period for raising the fund and limited partners could compile statistics. However, as so often in this information-poor environment, there is a series of practical problems associated with such an exercise: economic cycles have an impact on the average fund-raising period, not all teams are known, and their success is not just a function of their quality but also of their marketing efforts and momentum. Moreover, the measurement of the fund-raising period is problematic. See Sormani (2004c): "*Sherwood says: 'Permira raised its fund in six months, which is technically true. From the time of the launch of the information memorandum in March to the final closing in September was six months. But in reality it started marketing its fund the day after its finishing raising its previous one'*". Finally, more than in the context of normal banking operations, in private equity market practices, approaches and consensus opinions are continuously changing. A quantitative validation would have to address not only the methodology but also the continuous research process to keep in touch with evolving market practices.

to quantify the degree of deviation from an “ideal private equity fund”—as perceived by market experts—by scoring. We aim to derive the fair value as perceived by market players. Because qualitative scores for fair value aim to reflect the consensus opinion, a regular survey can support the assumptions.

We built on techniques as described, for example, by Crouhy, Galai & Mark (2001) in the context of credit ratings. It should not be forgotten that ratings are also rather new. Once the preserve of large, public corporations, banks only relatively recently started to use ratings for assessing credit risk related to small- and medium-sized companies. In this context, rating techniques gained acceptance rather than that they were “proven”.

### **16.5.2 Reliance on assumptions**

A possible criticism is the number of assumptions that are incorporated in the GEM. However, there is a trade-off between the sophistication of a model and number of assumptions to be made. Generally, the number of assumptions to be made is a function of the time horizon and the associated uncertainty.

We see a parallel to actuarial appraisals in life insurance or pensions, where two different actuarial firms seldom come up with the same figures. The most critical part of an actuarial appraisal process is the development of assumptions to be utilized in the projections. To a high degree these assumptions, e.g. on policyholder surrender rates, premium changes, new business production or reinsurance, reflect management judgement and expectations for future performance in areas such as new business activities, operating expenses or strategic direction. Likewise, for pension liabilities assumptions on salary changes or turnover need to be made. The discount rate needs to reflect the remaining active life for staff and the life expectancy for employees that have left the company. A sensitivity analysis is used to assess the impact of a reasonable range of variations for key assumptions on results. Such assumptions need to be agreed and documented. Rather than being able to determine the “true” value of the liabilities, actuarial appraisals are better in capturing changes in valuations subsequently.

## **16.6 CONCLUSION**

Often scoring methods can generate significant variations in their outcome for small changes in their input parameters. Therefore, the methodology chosen for determining the grades needs to be assessed and approved independently and its consistent application has to be regularly reviewed. A systematic decision approach cannot remove the subjectivity from the assessment, since different individuals—facing the same situation and having the same information—can arrive at different opinions. This effect and the lack of a guarantee of satisfactory results should not be construed as a failing of the formal assessment method. The value gained by implementing a systematic approach is in the clarification of the logic behind the assessment and the identification of the real issues that can hamper consensus and decision making.

## **APPENDIX 16A**

Pre-investment, the qualitative scoring methodology we described in Chapter 15 allows a ranking of fund proposals but not a quartiling of the still unknown vintage year population required for identifying the top teams. In other words, to form an opinion on the attractiveness

of an investment proposal, a ranking needs to be done in the context of the actual investment opportunities and the current and expected market conditions.

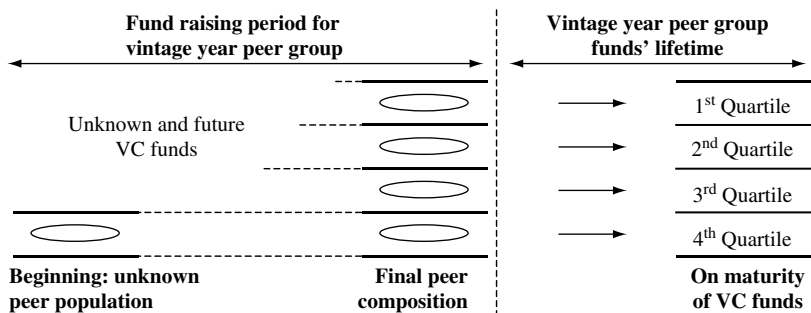
### 16A.1 IDENTIFYING BOTTOM FUNDS

“Lessons learned” are required to filter out unsuitable investment proposals. As the private equity market is opaque, the future peer group is largely unknown. Assuming that an investor has identified a private equity fund with bottom performer characteristics as the “best fund around”, in the worst case this investor is not aware of existing better proposals or funds of higher quality that later join the peer group.

However, potential bottom funds can easily be identified through the grading. Looking at how most institutions approach due diligence, we see that there is a wide consensus about what makes “losers”, and little leniency regarding perceived weaknesses. In fact, the probability of the fund closing, or its closing at the foreseen fund size, is obviously linked to its compliance with a catalogue of backward-looking criteria, often referred as “best market practices” (see Figure 16.4). Funds that have a high compliance with what the typical investor perceives as being characteristics of a likely winner will be more likely to close and start operation than “exotic” teams that, in one or more important dimensions, deviate from such “mainstream” characteristics. The less attractive funds will find it far more difficult to find investors. The start of their investment activities either could be significantly delayed or they may not be able to close at all. Only if an investor has no information on the peer group or has no access to funds with better performance expectations could he invest in a potential bottom performer. However, even if no better alternative is known, the best decision for an investor faced with a low-graded proposal is probably to wait until more information on the relative quality of the fund becomes available. In any case, it should not be difficult to get access to this fund as, most likely, the fund-raising period will be long and even in the last closing investors will be welcomed.

### 16A.2 IDENTIFYING TOP FUNDS

While substandard proposals can easily be weeded out through a relatively common list of criteria, identifying potential top performers requires “superior” selection skills of an experienced investor. One cannot identify top funds through grading by a commonly known list of historical “winners criteria” as the majority of proposals will be structured to comply



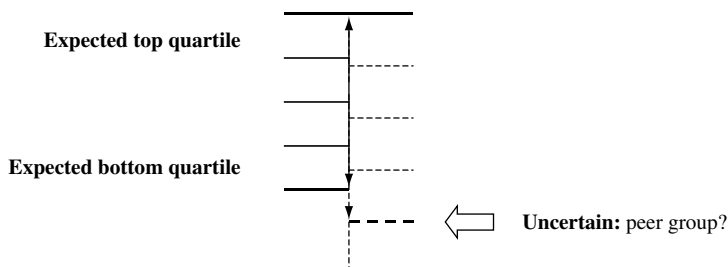
**Figure 16.4** Investment proposal—low expected performance grade



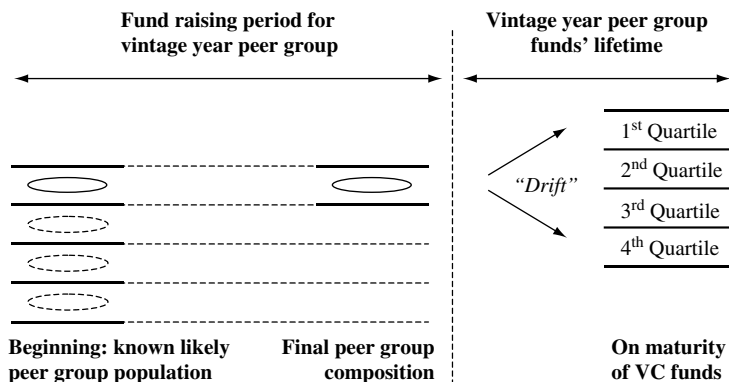
with these requirements. As the composition of the peer group is changing from cohort to cohort, to identify top quartile funds we need to rank the current investment proposals. If we had all information on the market we would be able to “rank” all known teams, based on their perceived attractiveness in the peer group, including the funds that have already closed and started their operation. Assuming that the assessment is correct, the sequence should correspond to the final performance ranking. We then break this “virtual deal flow pipeline” down into quartiles and aim to become limited partners in the top-graded funds.

However, we are faced with two problems. First, there is no—or at least no efficient—risk-adjusted pricing for private equity funds. All investments are done at par with only some adjustment on terms that will not compensate for the return differentials (see Box 6.1). As discussed before, implicitly this ranking will also reflect the likelihood of the fund closing. Therefore, the size of the peer group cohort is uncertain and only over the course of the calendar year does a clearer picture emerge (see Figure 16.5).

In the extreme there is a “flight to quality”, in which limited partners become even more restrictive in their investment decisions and only the “fittest” fund proposals “survive” and find investors. Consider the situation of a limited partner who aims to allocate his resources to VC funds, has correctly identified the top 25% of teams currently in fund-raising mode, and is even able to get access to them. It could well be that during the remainder of the year the other funds identified will not find the critical mass of investors, and will neither close during this year nor close at all. As a result, this top group becomes the entire peer group and will then evolve into top to bottom quartile of the benchmark (see Figure 16.6).



**Figure 16.5** Final peer group composition is unknown



**Figure 16.6** Investment proposal—high expected performance grade

Second, if the investor is faced with an investment proposal in line with historical “best market practice” criteria list, he is in a dilemma. Either he waits until the peer group composition is known. Then it is possible, at least in theory, to identify the best funds, but then the investment in these potential “top” funds is most likely also no longer possible. Consequently, the best decision is to commit as quickly as possible. But then the investor invests under uncertainty, e.g. in funds that comply with set criteria without knowing what the peer group population will eventually look like. This, of course, carries the risk that later better opportunities may be identified.

Of course, as soon as benchmark data and more information on the peer group population are available, an adjustment of the grade is possible. Despite this apparent “drift” into the lower quartiles, it could well be that the overall performance of the peer group will be exceptionally good, as only “top teams” formed the population. This drift, however, should not be misunderstood as “migration” as for ratings.<sup>13</sup> The difference between the grade assigned pre-investment and the quartile at the end of a fund’s lifetime is mainly explained by the uncertainty about the other participants in the market and not by the inability to form a judgement on the fund manager.

## APPENDIX 16B

In the GEM the economic value of a private equity fund is calculated based on the expected future IRR figures derived from real IRR statistics. They need to be adjusted for the fact that the range of possible outcomes is much larger for younger funds than for funds close to maturity.

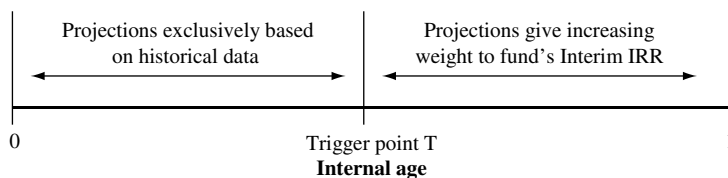
Inputs to our private equity fund IRR projection technique are real IRR statistics, the expected performance grade,  $j$ , the fund’s interim IRR, and its internal age,  $t$ . We use a Monte Carlo simulation to select  $n$  scenarios. For all grades we have determined the weights of the baskets at a fund’s internal age, 0. At the end of a fund’s lifetime (with internal age of 1), its grade is equivalent to its performance quartile within the benchmark. Let  $s_{i,j}(t)$  be the IRR under a scenario  $i$  for a fund graded  $j$  at internal age  $t$ . For the simulation, historical IRR figures are drawn out of the baskets according to a schedule that is reflecting grade of fund and its internal age.

The question is, how to determine the weights of the baskets during the fund’s lifetime? In absence of further statistics and information we simplistically take a “straight-line” schedule.<sup>14</sup> For our simulations we tried other schedules too, but without material changes of results.

To deal with the issue of the J-curve, we base our projections during the initial years of a fund on the real IRR statistics only, rather than on the fund’s interim IRRs. Burgel (2000) found that after 7–8 years, large changes in performance become unlikely, and interim IRRs and final IRRs converge. After a few years, interim IRRs can already give a good approximation of the fund’s overall return. To capture this behaviour, the GEM foresees a

<sup>13</sup> See Altman & Rijken (2003).

<sup>14</sup> One could draw a parallel to several accepted depreciation methods in accounting, such as “straight-line” or accelerated schedules such as “sum of digits” or “declining balance depreciation”. Note that the internal age is also a straight-line schedule. Its calculation gives the same weightings to capital inflows than to capital outflows. We just aimed to explain its principle. One example where this formula would be overly simplistic is when a fund draws down everything right away. Here the fund would be classified as already “half-way” through its lifetime. The internal age formula could be improved for example by giving different weights to inflows than to outflows or also by recognizing the fund’s “real” age.



**Figure 16.7** GEM—internal age trigger point

trigger point  $T$ , from which time onwards the interim IRR receives an increasing weight in the projections (Figure 16.7). As long as the fund's internal age is lower than a set  $T$ , the interim IRR is ignored entirely. If the internal age  $t \leq T$ , the projected IRR for this scenario is:

$$\overline{IRR}_{i,j} = s_{i,j}(t)$$

Only after the fund has reached an internal age higher than a set trigger do we start to take the interim IRR into consideration. If  $t > T$ :\*

$$\overline{IRR}_{i,j} = s_{i,j}(t)(1 - t) + IRR_i t$$

To estimate the fund's real lifetime, the contractual conditions are a good starting point. As we saw in the chapter on liquidity management, lifetimes of funds are strongly affected by the general economic environment and especially by the IPO markets. Therefore, best- and worst-case scenarios require regular reviews and updates. To generate sets of likely cash flow over the fund's lifetime, in our simulations we can use either directly the discrete distribution of the peer group or a modelled continuous distribution.

Finally, to adjust for the time value of money, the cash flows are then discounted and added up to the NPV of the fund. For a portfolio we run a Monte Carlo simulation drawing scenarios randomly for each fund and aggregate them to generate a portfolio cash-flow scenario. As we have no information on the correlation between funds, we assume independence between the funds—consistent with naïve diversification, as discussed in Chapter 8.

Practically, if an investor has no knowledge of the peer group composition, and according to the argument developed before, projections pre-investment could be based on the probabilities shown in Table 16.2. That view may be slightly pessimistic, as sub-standard funds are also continuously captured in the statistics. However, unless there is a market bubble, they are too few and small to have a significant impact.

In reality, the line between “mainstream” potential top-quartile funds and expected bottom-performers is blurred and a further differentiation is necessary. For this purpose we suggest

**Table 16.2** Weight of quartile baskets pre-investment (I)

	High-quality funds grade A	Low-quality funds grade D
Weight of first-quartile basket	$q_{1;1} = 0.25$	$q_{4;1} = 0$
Weight of second-quartile basket	$q_{1;2} = 0.25$	$q_{4;2} = 0$
Weight of third-quartile basket	$q_{1;3} = 0.25$	$q_{4;3} = 0$
Weight of fourth-quartile basket	$q_{1;4} = 0.25$	$q_{4;4} = 1$

\* As the historical statistics gives net returns (i.e. after all fees and carried interest) to the limited partners, we need to factor this in. Therefore, when we calculate the fund's interim IRR (IIRR) we still need to adjust for this.

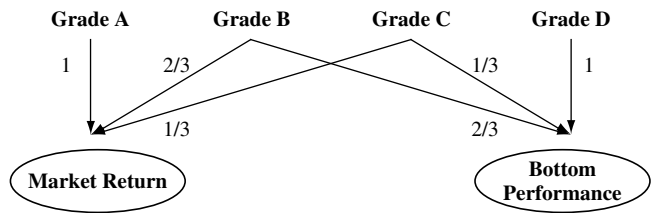


Figure 16.8 Determining B- and C-graded funds’ weightings through interpolation

Table 16.3 Weight of quartile baskets pre-investments (II)

	Grade B	Grade C
Weight of first-quartile basket	$q_{2;1} = \frac{2}{3}q_{1;1} + \frac{1}{3}q_{4;1}$	$q_{3;1} = \frac{1}{3}q_{1;1} + \frac{2}{3}q_{4;1}$
Weight of second-quartile basket	$q_{2;2} = \frac{2}{3}q_{1;2} + \frac{1}{3}q_{4;2}$	$q_{3;2} = \frac{1}{3}q_{1;2} + \frac{2}{3}q_{4;2}$
Weight of third-quartile basket	$q_{2;3} = \frac{2}{3}q_{1;3} + \frac{1}{3}q_{4;3}$	$q_{3;3} = \frac{1}{3}q_{1;3} + \frac{2}{3}q_{4;3}$
Weight of fourth-quartile basket	$q_{2;4} = \frac{2}{3}q_{1;4} + \frac{1}{3}q_{4;4}$	$q_{3;4} = \frac{1}{3}q_{1;4} + \frac{2}{3}q_{4;4}$

constructing a grid between these two extremes, based on an estimated probability that a fund will perform in line with the asset class or fail (Figure 16.8).

Grades for expected second- and third-quartile performance fall between these two extremes. We assume that the weights of the baskets are proportional to the grading class (Table 16.3). As an example, based on the initial weights assigned and the straight-line method, for a B-graded fund, the weights would be determined as shown in Figure 16.9.

It may appear a little odd that for a fund with expected second-quartile return pre-investment such a high weight is given to the historical fourth-quartile basket. However, this again reflects the worst-case situation we discussed previously, that such a fund will turn out

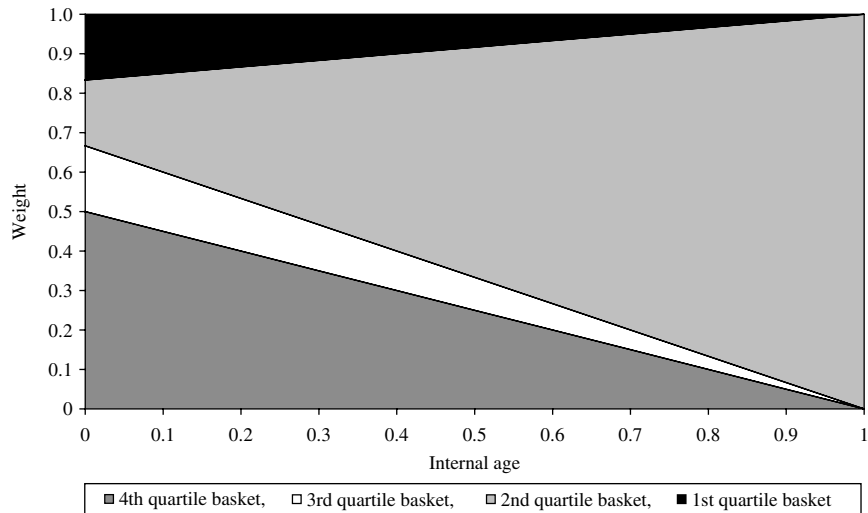


Figure 16.9 Change of weights, B-graded private equity fund

to be the weakest in its vintage year peer and the “last one to close”, and therefore “drifts” into the fourth quartile. Again it has to be recalled that the schedule is not a migration matrix giving probabilities for changing positions and therefore is not symmetrical.

## APPENDIX 16C: GRADING-BASED PRIVATE EQUITY FUND VALUATION—HOW FAIR IS MY VALUATION?\*

In Chapter 11, we describe the established approaches to value funds and explain why, we believe, they fail at measuring fair value, as requested by the recently amended IAS 39. Funds can neither be marked-to-market nor always valued by simply aggregating the fair values of their portfolio companies. As no active secondary market exists, such illiquid and long-term-oriented assets have to be marked-to-model. For this purpose, we developed the GEM valuation approach, based on an internal grading system. As explained in Chapter 13, the grading is a structured review that aims to rank the funds within their peer-group and to mark them to a basket of comparable funds. This basket’s statistical characteristics are then used for valuation and risk measurement.

The objective of this appendix is to give our views on the ongoing debate on valuations in the private equity industry and to discuss our valuation approach in this context. We start by reviewing the revised IAS 39<sup>15</sup> and then discuss how private equity funds should be classified and measured. Finally, we review the GEM valuation approach and explain why, we believe, meets the requirements for fair value under IAS 39.

### 16C.1 THE REVISED IAS 39

#### 16C.1.1 How should funds be classified?

The revised IAS 39 defines four categories of financial assets:<sup>16</sup>

- *Financial asset at fair value through profit and loss: “financial asset classified as held for trading or designated upon initial recognition as so by the entity”.*
- *Held-to-maturity investments: “financial assets with fixed or determinable payments and fixed maturity that an entity has the positive intention and ability to hold to maturity”.*
- *Loans and receivables: “financial assets with fixed or determinable payments that are not quoted in an active market”.*
- *Available-for-sale financial assets: “financial assets that are designed as so by the entity or are not classified as the three previous categories”.*

Obviously, having no fixed or determinable payments, private equity funds can be classified neither as held-to-maturity investments nor as loans and receivables. To classify private

\* Disclaimer: We base our valuation technique on a model, but in practice such model are not yet used for the measurement of VC fund valuations under IAS 39 at the time of writing this book. For any illiquid long-term asset a direct verification of a model-based valuation is generally complex and often not possible without sufficient historical data from the model. Even if the model is based on assumptions that market participants would use in their estimates, some independent auditors could be faced with a scope limitation and therefore may not be able to express an unqualified opinion on financial statements that are materially affected by such a measurement. It could be expected that time and a broader market acceptance could make such models IAS 39 “compliant”.

<sup>15</sup> Please note that, as of today, the new IAS 39 has not yet been finalised and is therefore still subject to changes. This Appendix is based on the latest information available to us at the date of publication.

<sup>16</sup> According to IAS 39, the “... entity may use other descriptors for these categories or other categorisations when presenting information in the face of the financial statements. The entity shall disclose in the notes the information required by IAS 32”.

equity funds as “held for trading” does not reflect the reality of the industry. Indeed, it appears highly unlikely that such an asset is acquired or incurred with the intention of selling or repurchasing it in the near term, or that part of a portfolio would show evidence of a recent actual pattern of short-term profit taking. Meanwhile, an entity could still designate a private equity fund as financial asset at fair value through profit and loss, under the condition that it is not an asset that meets the definition of loans and receivable and that such a fair value is verifiable.

Should the fund not qualify for any of the first three categories, they would thus fall into the last one, financial assets available-for-sale.

### 16C.1.2 How should private equity funds be measured?

Initially, all financial assets should be measured at their fair value plus transaction costs, irrespective of whether the fund is classified as a financial asset at fair value through profit and loss or a financial asset available-for-sale. For private equity funds, such fair value is normally the net amount paid into the fund (also called the net paid-in or NPI) and, in the case of secondaries, the transaction price. With regard to the transaction costs, it is not fully clear what needs to be taken into account. Taking direct costs could theoretically comprise all the due diligence expenses. We would rather exclude transaction costs or limit them to the direct external costs, such as the legal expenses or the equalisation premium.

Subsequently, there are various ways to measure private equity funds, depending on their classification:

- When the private equity funds have been designated as financial assets at fair value through profit and loss, they have always to be measured at their fair value, without any deduction of transaction costs, and this valuation has to be verifiable.
- When the private equity funds have been designated as financial assets available-for-sale, they have to be measured either at their fair value, without any deduction of transaction costs, when the fair value can be reliably measured or when it cannot be reliably measured at cost.

The difference between “verifiable” and “reliable” is that for the former the variability in the range of reasonable fair value estimates is lower than for the latter. Under IAS 39, the measure is considered *verifiable* when the fair value estimate is based on:

- “*observable current market transactions in the same instrument (i.e. without modification or repackaging)*”; or
- “*a valuation technique whose variables include primarily observable market data and that is calibrated periodically to observable current market transactions in the same instrument (i.e. without modification or repackaging) or to other observable current market data*”; or
- “*a valuation technique that is commonly used by market participants to price the instrument and has been demonstrated to provide realistic estimates of prices obtained in actual market transactions*”.

The measure is considered *reliable* if:

- “*the variability in the range of reasonable fair value estimates is not significant for that instrument*”; or
- “*the probabilities of the various estimates within the range can be reasonably assessed and used in estimating fair value*”.

When measured at cost, “an entity shall assess at each balance sheet date whether there is any objective evidence that a financial asset or group of financial assets is impaired”.

### 16C.1.3 How should fair value be measured?

In the standard, the fair value is defined as “the amount for which an asset could be exchanged between knowledgeable, willing parties in an arm’s-length transaction”. The standard foresees two ways to arrive at a fair value:

- Active market: quoted price.
- No active market: valuation technique.

#### 16C.1.3.1 Quoted price

In the standard, a market is active “if quoted prices are readily and regularly available from an exchange, dealer, industry group, pricing service or regulatory agency, and those prices represent actual and regularly occurring market transactions on an arm’s-length basis”. Obviously no such market exists for private equity funds, and therefore, the fair value can only be obtained using a valuation technique.

#### 16C.1.3.2 Valuation technique

When no active market exists, IAS 39 allows estimating the fair value with valuation techniques. Within the techniques, the standard mentions “using recent arm’s-length market transactions between knowledgeable, willing parties, if available, reference to the current fair value of another instrument that is substantially the same, discounted cash flow analysis and option pricing models”. In our views, only the discounted cash flow analysis could be applied for private equity funds.

The valuation would be considered fair if “(a) it reasonably reflects how the market could be expected to price the instrument and (b) the inputs to the valuation technique reasonably represent market expectations and measures of the risk–return factors inherent in the financial instrument”. These requirements are met when the valuation techniques:

1. Make maximum use of market inputs.
2. Rely as little as possible on entity-specific inputs.
3. Arrive at a realistic estimate of the fair value.
4. Incorporate all factors that market participants would consider in setting a price.
5. Are consistent with accepted economic methodologies for pricing financial instruments.

Furthermore, periodically, an entity has to calibrate the valuation technique and test it for validity using prices from any observable current market transactions in the same instrument (i.e. without modification or repackaging) or based on any available observable market data. In addition, “in applying discounted cash flow analysis, an entity uses one or more discount rates equal to the prevailing rates of return for financial instruments having substantially the same terms and characteristics, including the credit quality of the instrument, the remaining term over which the contractual interest rate is fixed, the remaining term to repayment of the principal and the currency in which payments are to be made”.

Finally, depending on whether the variability in the range of the valuation is low, not significant or high, the private equity fund will be measured as a financial asset at fair value through profit and loss, or as a financial asset available for sale measured at fair value or at cost minus impairment (see above).

#### 16C.1.4 How should impairment be measured?

IAS 39 states that “*a financial asset or group of financial assets is impaired and impairment losses are incurred if, and only if, there is objective evidence of impairment as a result of one or more events, which occurred after the initial recognition of the asset (a ‘loss’ event), and that loss event (or events) has an impact on the estimated future cash flows of the financial asset or group of financial assets that can be reliably estimated . . . The amount of the impairment loss is measured as the difference between the carrying amount of the financial asset and the present value of estimated future cash flows discounted at the current market rate of return for a similar financial asset*”.

Although we believe it is feasible to identify such loss events, essentially a methodology similar to the one required for determining a fair value needs to be followed, as, for asset without an active market such as private equity funds, to reliably estimate the impact on the future cash flows, valuation techniques are also needed.

#### 16C.1.5 Conclusion: the alternatives available for private equity funds

Based on what has been described above, we understand that IAS 39 offers three alternatives for a private equity fund:

1. If fair value can be estimated and is verifiable, the fund is classified as a financial asset at fair value through profit and loss, and measured at fair value.
2. If fair value can be reliably estimated but is not verifiable, the fund is classified as a financial asset available for sale and measured at fair value.
3. If fair value cannot be reliably estimated, the fund is classified as a financial asset available for sale and measured at cost minus impairment.

For all options, the position has to be remeasured periodically (either at fair value or for impairment). As there is no active market for private equity funds, valuation techniques have to be used for all options. Depending on whether the variability in the range of the estimations of the fair value is low, not significant or high, option 1, 2 or 3 will have to be applied.

### 16C.2 VALUATION MODEL (MARK-TO-MODEL)

In this chapter, we have described our GEM valuation approach. We believe that this approach is IAS 39 compliant for the following reasons:

1. All available market inputs can be taken into account in the cash flow projections model. First, being a discounted cash flow approach, the discount rate is estimated mainly based on market input. Furthermore, the projections are supported by real cash flows series.



2. Entity-specific inputs are limited to a structured review that aims to rank the private equity funds within their peer group and are only used as a substitute for the lack of market inputs. Furthermore, in no circumstances do available market inputs need to be substituted by any entity-specific inputs.
3. The model provides a realistic estimate of the fair value, as it is based on realistic cash flow statistics and as the present values are calculated using a realistic discount rate.
4. The structured review that aims to rank the private equity funds within their peer group has been designed so that all factors that market participants would consider in setting a price are taken into account.
5. Being based on a discounted cash flow analysis, it is consistent with accepted economic methodologies for pricing financial instruments.

Being calibrated periodically to observable cash flows and market statistics, our valuation could be considered verifiable or at least reliable. Finally, in addition to being IAS 39-compliant, such a top-down approach appears to be currently the only viable solution for large investors. Indeed any bottom-up approach requires the fair valuation of all the existing and also future portfolio companies, and, therefore will be much less cost-effective than the proposed top-down approach.

## Private Equity Fund Discount Rate

As for any financial asset, it is only worth investing in a private equity fund if its expected rate of return is at least equal to its financing cost. In the previous chapter, we proposed the GEM valuation approach and explained how cash flows for a private equity fund can be projected. Based on this technique and once a discount rate is known, it is possible to estimate the present value of a fund. In this chapter, we take a closer look at this discount rate.

Finance tells us that the risk in an investment should be the risk perceived by a well-diversified investor, and that the expected return should be a function of this risk measure. It is important to stress the difference between the “required return”, which is driven by the investor (level of diversification, risk perception), and the “discount rate”, which should only be driven by the market risk of the asset. This difference explains the gap that often exists between the rates used by market participants and those that should be used to estimate a fair valuation.

First, we review the capital asset pricing model (CAPM) and how—and under which limitations—it can be used for private equity funds. Then, we review alternatives to the CAPM. Finally, we summarise and provide our conclusions.

### 17.1 THE CAPITAL ASSET PRICING MODEL

Some practitioners say that finance only became a full-fledged, scientific discipline in 1964, when Sharpe published his revolutionary paper on the CAPM.<sup>1</sup> For the first time, investors could quantify what “risk” was and specify how it should be priced. Sharpe’s contribution was to point out that, in equilibrium, every asset must offer an expected return that is linearly related to the covariance of its return with expected return of the market portfolio.

But is the CAPM applicable to private equity funds? The CAPM assumes that investors hold well-diversified portfolios. Knowing that the vast majority of the fund investors are large and sophisticated institutions, such an assumption appears sensible. The model also assumes that there are no transactions costs, that buyers and sellers are fully informed, and that the market is in equilibrium. Obviously, such assumptions are rather heroic in the context of private equity funds. However, if the objective is to estimate a fair value, it is implied that parties are knowledgeable and willing and that the transaction is at arm’s length, and, therefore, such assumptions appears more acceptable.

Assuming that the CAPM can be used here, we still need to get access to the required data. Indeed, accuracy depends not only on the model used but also on the availability and the quality of the financial data injected into the model. The CAPM requires three inputs: the risk-free rate, the expected equity risk premium and the beta.

---

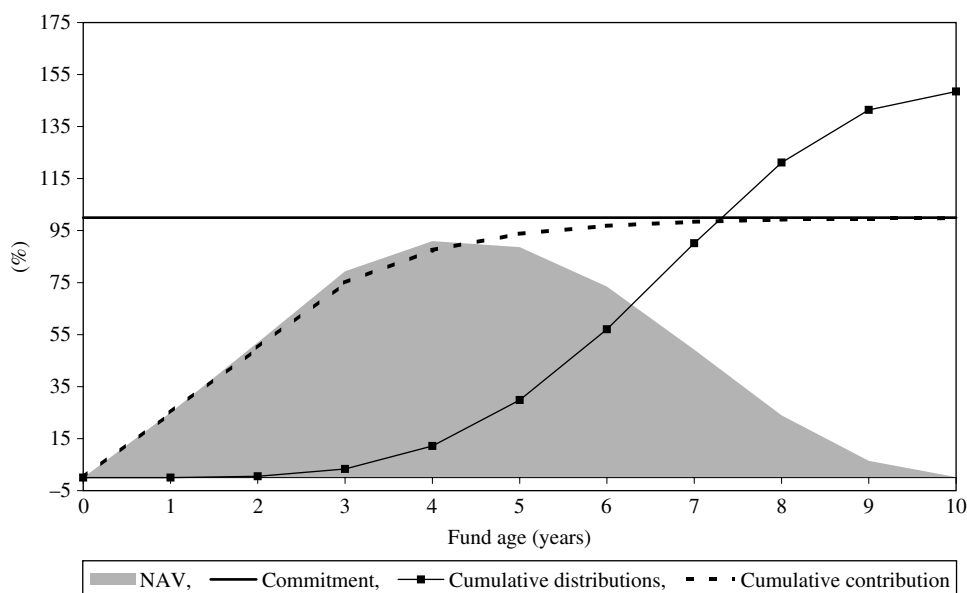
<sup>1</sup> Mathematically, the CAPM is expressed as  $E(R_j) = r_f + \beta_j(R_m - r_f)$ , where  $R_m$  is the expected return of the market portfolio;  $\beta_j$  is the beta of asset  $j$ ;  $E(R_j)$  is the expected return of asset  $j$ ;  $r_f$  is the current return on a risk-free asset and  $(R_m - r_f)$  is the market risk premium.

### 17.1.1 Risk-free rate

The risk-free rate is the starting point for most models in finance, such as the DCF model or the Black–Scholes formula. The risk-free rate asset is defined as the asset for which the actual return is always equal to the expected return. It can also be defined as the return of an asset, which is not affected by the market and has, therefore, a beta of zero. This condition is met when the asset has no risk of default associated with its cash flows and if there is no reinvestment risk. A purist would argue that this requires different risk-free rates for each cash flow, e.g. for a 2 year time horizon, the risk-free rate has to be a 2 year default-free (government) zero coupon bond. But, in practice, one risk-free rate is used according to the duration of the future cash flows being analysed. In the case of a standard private equity fund, at inception, the average duration is 6–8 years (see Figure 17.1). Furthermore, the risk-free rate used has to be consistent with the cash flows measured. Therefore, for EUR-denominated funds,<sup>2</sup> EU government zero-coupon bond rates should be used; for USD denominated ones, US rates, etc. For illustration purposes, we have provided in Figure 17.2, some government zero coupon yield curves.

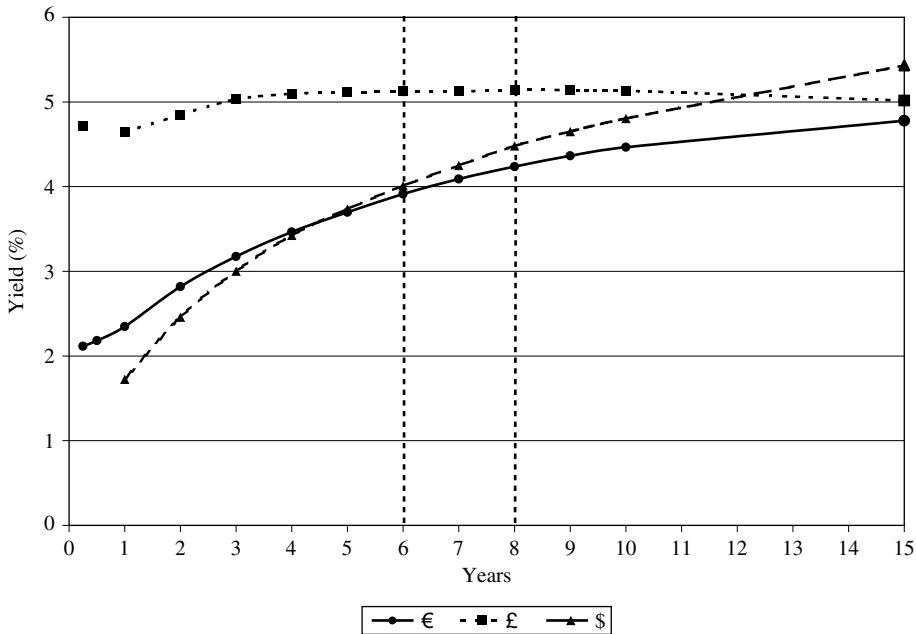
### 17.1.2 Equity risk premium

The CAPM does not reflect the total risk that an investment carries but only quantifies the marginal risk that it adds onto a diversified portfolio. This is explained by the nature of the total risk, which can be broken down into two components: the investment-specific



**Figure 17.1** Contribution and distribution pattern

<sup>2</sup> Here it is important to stress that it is not the VC fund location that matters but only the currency in which the cash flows are estimated.



**Figure 17.2** Government Zero-coupon yield curves  
Source: Bloomberg, July 2004.

(or idiosyncratic) and the market (or systematic) risks. As the former can be diversified away while the latter cannot, diversified investors require an excess return for being exposed to the latter. Such a distinction is important and explains why investors in private equity funds have often a misperception of the risk taken. Indeed, many investors expect a premium as a compensation for the fund's total risk, while only its systematic portion should be rewarded. However, although this approach is perfectly acceptable when investors are diversified, it is much less so in the context of an investor holding only a few positions.

Moskowitz & Vissing-Jørgensen (2002) have analysed the return to private equity. The analysis was based on data derived from the US Survey of Consumer Finances and various national income accounts, and therefore mostly relates to non-intermediated investments in non-public companies, as opposed to intermediated investments undertaken by private equity funds. They estimated that the additional premium required to compensate an investor holding a single position for the risk taken was at least 10% per year. Using recent high-tech IPOs, Kerins, Smith & Smith (2001) estimated that the required additional premium for an entrepreneur with 25% of its wealth in a single venture capital project is in the 25% area. This is a good illustration of the importance of the additional premium required by an investor exposed to the total risk, or at least to a significant portion of it compared to a fully diversified investor exposed only to the systematic risk.

In the CAPM, this extra return over the risk-free rate is estimated based on a measure of the relative risk added by an asset to a diversified portfolio, i.e. the beta (see Section 17.1.3) and on the expected risk premium for the market portfolio. This premium is normally estimated either by using historical data or by extracting the one implied by the current market prices. In the USA, the premium estimated with historical data from 1926–1998 is 6.10%.

Although this approach is commonly used, there are some limitations to it. First, there can be surprisingly large differences in the estimated premium,<sup>3</sup> notably due to differences in the time period used,<sup>4</sup> in the choice of the risk-free security<sup>5</sup> and in the use of arithmetic vs. geometric averages. Second, the “survivor bias” has an impact on market data and results in higher estimated risk premiums than the real historical ones. Third, while it is already difficult to estimate a reliable historical premium for mature markets such as the USA, it becomes even more so for markets with short and volatile histories. Here, one solution is to consider the US premium as a basis and to adjust it in order to take into account the additional country systematic risk.

The alternative to the historical risk premium is to estimate the equity risk premium implied by the current market prices. Obviously, the implied equity premium changes over time much more than the historical risk premium. Applied to the US market, the average implied premium is in the 4% area.<sup>6</sup>

Undoubtedly, the equity risk premium discussion will continue. It is argued that the premium is probably below the 6% figure estimated in much of the financial literature.<sup>7</sup> We believe that using an expected equity risk premium in the range of 4–5% is reasonable.

### 17.1.3 Beta

The beta is the third and last parameter required for the CAPM. As already stated, the beta has two basic characteristics: it measures the risk added onto a diversified portfolio, rather than total risk, and it measures the relative risk of an asset and thus is standardised around one. The beta reflects the movement of the asset price with respect to the market index. For a beta equal to 1, the price moves up or down in the same way as the index, i.e. the asset has the same risk as the index. For a beta higher than 1, the price moves higher or lower than the index movement, i.e. the asset has a higher risk. And for a beta of zero, the asset is not affected by what happens in the market and a return equal to the risk-free rate should be expected.

The standard way to measure the beta is by regressing the returns on any asset against returns on an index used as a proxy for the market portfolio, over a reasonable time period.<sup>8</sup> In practice, however, there are a number of measurement issues: the choice of an index,<sup>9</sup>

<sup>3</sup> As per Damodaran (2001): “the risk premium estimated in the US markets by different investment banks, consultants and corporations range from 4% at the lower end to 12% at the upper end”.

<sup>4</sup> Shorter periods are used to provide an estimate that will better reflect the current risk aversion of the average investor. In doing so, it is assumed that the risk premium is changing over time and that, therefore, using a shorter time period will provide a more accurate estimate.

<sup>5</sup> As explained previously in this chapter, the risk-free rate to be used in order to estimate the discount rate should be the government zero-coupon bond rates with a maturity equal to the VC funds duration. Therefore, to be consistent, the same risk-free rate should be used when estimating the equity risk premium.

<sup>6</sup> The difference with the historical premium could be due to the survivor bias.

<sup>7</sup> See Siegel (1999).

<sup>8</sup> This is done using the following simple linear regression:  $Y = \alpha + \beta X + e$ , where  $Y$  is the dependent variable, i.e. the asset return or excess return;  $\alpha$  is the constant, i.e. the risk free rate;  $\beta$  is the regression coefficient, i.e. the beta (it can be interpreted as indicating the percentage change in variable  $Y$  that is caused by a one-unit change in the value of  $X$ );  $X$  is the independent variable, i.e. the index return or excess return or market risk premium, and  $e$  is the error or disturbance, also referred as the residual. The regression coefficient is estimated as follows:  $\beta = \frac{cov_{XY}}{var_X} = \frac{corr_{XY} * vol_X * vol_Y}{vol_X^2} = \frac{corr_{XY} * vol_Y}{vol_X}$ .

<sup>9</sup> The best estimate are obtained with market-weighted indices that include as many securities as possible.

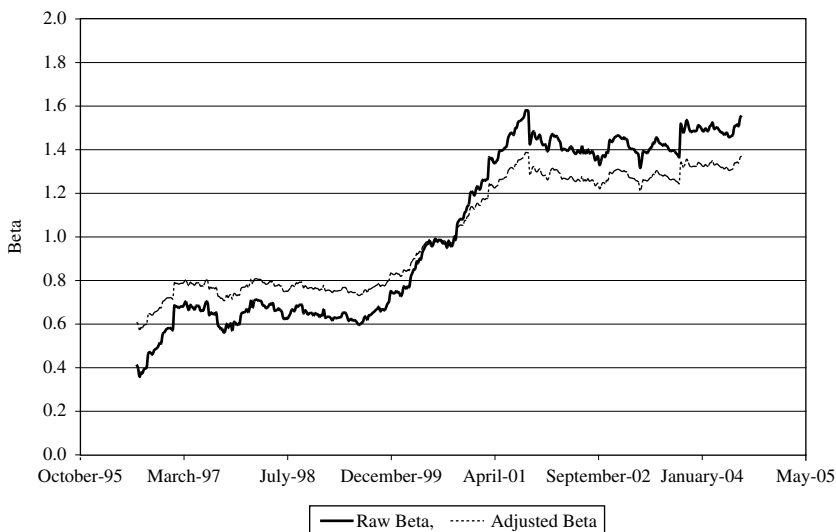
the choice of a time period<sup>10</sup> and the choice of a return interval.<sup>11</sup> Knowing that for private equity funds we have little historical data and almost no comparable data from funds that have been listed for several years, the conventional approaches to estimating risk parameters cannot easily be used.

## 17.2 PRIVATE EQUITY FUND BETAS

The risk-free rate and the equity risk premium are not problematic and they can be determined relatively easily. Therefore, to calculate the discount rate of funds, we only need to estimate the beta. Below we present the standard approach to estimating betas, then various alternatives.

### 17.2.1 Estimation based on quoted comparable

When an asset is not publicly traded, it is common practice to use as a proxy the beta of a similar quoted asset. As the most liquid stock in the private equity industry is probably 3i, its beta can give an indication (see Figure 17.3). 3i is a world leader in private equity and venture capital. It focuses on buyouts, growth capital and venture capital, and invests across Europe, the USA and in Asia Pacific. As of March 2004, its portfolio was roughly composed of 51% buyouts, 31% growth capital, 12% venture capital and 6% quoted equity, and amounted to £4326 million. In terms of geography, the split was 58% UK, 35% continental Europe, 5% USA and 2% Asia. Although not free from bias, 3i is potentially a good comparable for



**Figure 17.3** 3i PLC—historical beta

Source: Bloomberg.

<sup>10</sup> By going back further in time, we get the advantage of having more observations in the regression, but this could be offset by the fact that the VC fund itself might have changed its characteristics, in terms of business mix and leverage, over that period.

<sup>11</sup> Using shorter return intervals increases the number of observations in the regression, for any given time period, but it does come with a cost. Assets do not trade on a continuous basis, and when there is non-trading on the asset, the beta estimated can be affected.

a portfolio of European private equity funds, but less for VC funds. Nevertheless, it is still worth looking at it in more detail.

3i's beta remained relatively stable over two main periods, before and after the Internet bubble. Before the bubble, the beta was mostly 0.6–0.8, supporting the hypothesis that an investment in private equity was a good way to diversify a portfolio. Post-bubble the picture changes, with betas of 1.20–1.60, supporting the alternative hypothesis that an investment in private equity is rather risky. This change is a little puzzling and, frankly speaking, we do not have any explanations.

3i is not the only quoted private equity asset. Bauer, Bilo and Zimmermann (2001) researched other publicly traded private equity (PTPE). They classify PTPE into three groups: listed companies whose core business is private equity, e.g. 3i, mentioned above; quoted investment funds, e.g. Schroeder Ventures Trust; and specially structured investment vehicles, e.g. Castle Private Equity. They identified more than 200 PTPEs and, after liquidity constraints, more than 100 that were acceptable for their investigations.

Over the period 1988–May 2000, they calculated the volatilities of the various public equity indexes and of PTPEs. The PTPE volatilities were similar to that observed on the public markets. In their study, they did not calculate correlations or betas. However, assuming that all the PTPE risk is systematic, or in other words that its correlation with the market is equal to 1, betas can be easily calculated by comparing the volatility levels.<sup>12</sup> The betas obtained with this approach, which is further explained in Section 17.2.2, are in the range 0.63–1.08 (see Table 17.1).

They further refined their analysis by splitting the PTPE in the following sub-classes: incubators (27), ventures<sup>13</sup> (39), private equity funds (28), buyout houses (12) and balanced funds (12). Making the same assumption as above, i.e. that all the risk is systematic, betas can be calculated by comparing the PTPE volatility levels and those of the public equity indices (see Table 17.2). For VC, the betas were in the range 1.40–2.42, with a mean of 1.92.<sup>14</sup>

**Table 17.1** PTPE betas against major indices

Index	Volatility (ann.) (%)	Implied PTPE beta
MSCI	12.35	1.08
S&P 500	14.47	0.92
NASDAQ	21.33	0.63
STOXX	15.37	0.87
Russell 2000	15.88	0.84
PTPE (overall without incubators)	13.37	1.00

*Datasource:* Datastream/Bloomberg (1988–05/2000)

*Source:* Bauer, Bilo & Zimmermann (2001) and own calculations.

<sup>12</sup> Indeed, assuming that the correlation with the market is equal to one, the estimation of the beta can be simplified as follows:  

$$\beta = \frac{\text{cov}_{XY}}{\text{var}_X} = \frac{\text{corr}_{XY} \cdot \text{vol}_X \cdot \text{vol}_Y}{\text{vol}_X^2} = \frac{1 \cdot \text{vol}_X \cdot \text{vol}_Y}{\text{vol}_X^2} = \frac{\text{vol}_Y}{\text{vol}_X}.$$

<sup>13</sup> Bauer, Bilo and Zimmermann (2001) defined Venture as follows: “they invest directly in early or expansion stage companies which are active in technology- and innovation-driven sectors and have great growth potential”.

<sup>14</sup> These results call for a judgement on which of these indices gives the best beta estimate. In short, indices that are market-weighted and that include more securities should be favoured. In addition, the index should also reflect the portfolio of the marginal investor.

**Table 17.2** Breakdown of PTPE betas by stage

	Ventures	Incubators	Buyouts	PE-Funds	Balanced	Overall	Overall (without incubators)
Sample size	39	27	12	28	12	124	97
Volatility (ann.)	29.9%	41.8%	9.4%	13.8%	17.1%	16.9%	14.6%
Betas							
MSCI	2.42	3.39	0.76	1.12	1.39	1.37	1.18
S&P500	2.07	2.89	0.65	0.96	1.18	1.17	1.01
NASDAQ	1.40	1.96	0.44	0.65	0.80	0.79	0.69
STOXX	1.95	2.72	0.61	0.90	1.11	1.10	0.95
Russell 2000	1.88	2.63	0.59	0.87	1.08	1.07	0.92
Max	2.42	3.39	0.76	1.12	1.39	1.37	1.18
Min	1.40	1.96	0.44	0.65	0.80	0.79	0.69
Mean	1.94	2.72	0.61	0.90	1.11	1.10	0.95

*Datasource:* Datastream/Bloomberg (PTPE, 05/1996–02/2001, and public indices, 1986–2000)

*Source:* Bauer, Bilo & Zimmerman (2001) and own calculations.



These results support the hypothesis that VC is more risky than publicly quoted equity, and the buyouts are less. Assuming a risk premium of 5%, VC requires a risk premium over public equity above 400 bp. We cannot draw final conclusions based on this analysis, as the sample used is limited and most probably not fully representative of the VC market. Finally, there are several important dimensions, which have not been taken into account in the study, that may be key factors for estimating betas, such as the geography or the industry sectors.

Recently, Zimmermann *et al.* (2004) further researched the risk and return of PTPE. This work, which is the continuation of the work of Bauer, Bilo and Zimmermann (2001), defines and discusses different indices for PTPE. Based on this work, a new benchmark for private equity, called LPX 50, has been created. The benchmark is either value-weighted (VW) or equally weighted (EW). The 50 PTPEs that compose the index have been selected based on several liquidity criteria.<sup>15</sup> Then the index is constructed out of the 50 most capitalized companies. Although they have not calculated correlation coefficient, betas can still be calculated by making the same assumption as before, i.e. that all the risk is systematic. The betas are in the range 0.55–1.25, depending on the index chosen (see Table 17.3).

Weidig & Mathonet (2004) looked at the beta of PTPEs listed on stock exchanges, and only select PTPEs with some degree of liquidity and historical data. They computed betas for several PTPEs and found very low betas around zero, which in their view was due to the illiquidity of these stocks. They tried to correct for this bias by using a technique advocated by Ibbotson, Kaplan & Peterson (1997). As a result, the betas are significantly higher, but on average no higher than 1. They did not make any definite statement but concluded that PTPEs are probably not much different to public equity.

Another study that analyses public market data was done by Kerins, Smith & Smith (2001). They used recent high-technology IPOs to estimate the opportunity cost of capital for venture capital investments. Using a 4% risk-free rate and a 6% market risk premium, they estimated the discount rate for well-diversified investors at 11.4%, which implies a beta of 1.23. This result, although interesting, cannot be used for VC funds, as the recent high-technology IPOs are not representative of the VC market but rather of the sub-segment of the highly successful companies, and as post-IPO trading is often impacted by IPO techniques such as price supports.

**Table 17.3** LPX 50

	LPX 50 VW	LPX50 EW	MSCI world	Nasdaq
Volatility	18.50%	15.04%	14.76%	27.44%
Implied beta vs. MSCI world	1.25	1.02	1	N/A
Implied beta vs. Nasdaq	0.67	0.55	N/A	1

Base date: December 31 1993–July 2 2004

source: Zimmermann *et al.* (2004).

<sup>15</sup> A minimum of 30 weekly observations, a market value of minimum USD20 million, a relative trading volume of 0.1% per week, a bid–ask spread smaller than 8% and a continuity of trade of 15%.

### 17.2.2 Alternatives to the “standard” regression betas

In general, the performance of private equity funds cannot be easily compared to public equity, mainly due to differences in return measurement practices.<sup>16</sup> Furthermore, as funds have little historical data and almost no comparables that have been listed for several years, the conventional approaches to estimating risk parameters cannot be easily used. However, there are some alternatives to simple regression betas. The first is to come up with another measure of relative risk (which is what beta is). The second is to estimate bottom-up betas, which reflect the businesses a firm is operating in and its current financial leverage. The third is to modify and correct the return data to make the estimation of the beta possible.

#### 17.2.2.1 Relative risk measures

Relative risk measures do require that we make some assumptions about the nature of risk. For example, the relative volatility measures the volatility of an asset relative to the average volatility across all assets in that market. Relative volatilities are standardised around 1. A relative volatility greater than 1 indicates above-average risk, while a relative volatility less than 1 indicates below-average risk. The relative volatility can be used in much the same way as the traditional beta estimate to compute expected returns. The relative volatility measure does not require a correlation measure and hence is less noisy. However, this comes at a cost. The relative volatility measure is based upon the assumption that total risk and market risk exposures are perfectly correlated. This is the approach we have used with the results of Bauer, Bilo and Zimmermann (2001) and Zimmermann *et al.* (2004) to come up with estimations of betas.

#### 17.2.2.2 Bottom-up beta

One alternative is to estimate risk parameters using the financial characteristics of the portfolio companies. Such an approach is based on a feature that betas possess: the beta of two assets put together is a weighted average of the individual asset betas, with the weights based upon market value. Consequently, the beta for a fund is a weighted average of the betas of all of different businesses the fund has invested in and can be estimated as follows:

1. Identify the type of businesses that make up the portfolio.
2. Estimate the unleveraged beta(s) for each type of business.
3. Calculate the leverage for each portfolio companies, using market values if available. If not, use the target leverage (which is better) specified by the management of the company or industry-typical debt ratios.
4. Estimate the leveraged beta for each portfolio company using the unleveraged beta from step 2 and the leverage from step 3. Note that, in the venture capital industry, there is no debt but the deal structuring often implies leverage.
5. Calculate the unleveraged beta for the fund by calculating the weighted average of the portfolio companies' leveraged betas, using the market values. If the market values are not available, use a reasonable proxy, such as the last reported valuation or the cost.

---

<sup>16</sup> For private equity investments the internal rate of return is used as performance measure, which is a dollar-weighted return. For public investments usually a time-weighted return is used.

6. Calculate the fund's leverage, using market values if available. If not, use the target leverage (which is better) specified by the management or industry-typical debt ratios, which for VC funds is normally zero.
7. Estimate the fund's leveraged beta using the unleveraged beta from step 5 and the leverage from step 6.

For three reasons this approach provides better beta estimates for funds. The first is that while regression betas are noisy and have large standard errors, averaging across regression betas reduces the noise in the estimate. The second advantage is that the beta estimates reflect the fund, as it exists today, since it is computed based upon current weightings of its different businesses. The final advantage is that the leveraged beta is computed using the current financial leverage (or even better the expected or target one) of the firm, rather than the average leverage over the period of the regression. This approach is generic and can be applied to funds in any market. The “dark side” of this approach is that it remains difficult to identify quoted companies that are comparable to venture capital companies and that, as for many private equity funds, future cash flows are generated not only from existing investments but also from investments yet to be made; such an approach requires an assumption to be made with regard to these future investments.

Ljungqvist & Richardson (2003) used such an approach to estimate beta based on a private database of actual cash flows of VC and buyout funds over the last two decades. This dataset was composed of 73 funds raised over the period 1981–1993, called by the authors “mature” funds. The database had roughly 88.2% buy-outs, 11.8% venture capital split. In terms of geography, the split was 91.1% US funds, 7.4% EU funds and 1.5% Latin American funds. They looked at each fund's investments in detail, assigning industry betas to the portfolio companies in order to estimate the fund risk. In doing so, they made the simplification assumption that the leverage of the private company coincides with that of the industry, which allowed them to use directly the industry leveraged beta based on Fama & French (1997)'s estimations. Then they used the capital disbursements to calculate the funds' weighted average betas. The results are presented in Table 17.4. These estimates suggest that buyout funds are riskier than the market (beta of 1.08) but less than VC funds (beta of 1.12). However, no final conclusion can be drawn, as buyout funds typically use more leverage than the industries they invest in, and as VC funds use less to no leverage. The authors acknowledged this issue for buyouts and did back-of-the-envelope calculations to better understand the impact of leverage.

### 17.2.2.3 Beta based on modified and corrected data

The characteristics of private equity funds cause issues with modern portfolio theory. Indeed, the absence of a market with continuous trading, and the resulting appraised asset class nature of funds leading to a stale pricing or smoothing process, make the measurement of true volatilities and correlations with other asset classes difficult. In order to measure betas, data need to be corrected and adjusted. Arthus & Teiletche (2004) estimated the optimal share of private equity in the portfolio of diversified European portfolios. In doing so, they had to estimate all the required input to estimate betas. To obtain time-weighted return as required for the CAPM, they did not use final IRRs, but rather “*periodical aggregated returns built on the sum of all the funds for a specific period of time (i.e. the sum of the cash flows and net asset values between the starting and the ending dates of the chosen period)*”. Then they corrected these “*aggregated quarterly return data generated by the smoothing*

Table 17.4 Portfolio risk

	All funds (1981–1993)					Venture funds (n = 19)					Non-venture funds (n = 54)				
	Mean	SD	First quartile	Median	Third quartile	Mean	SD	First quartile	Median	Third quartile	Mean	SD	First quartile	Median	Third quartile
Weighted portfolio betas	1.09	0.10	1.05	1.10	1.14	1.12	0.06	1.09	1.12	1.16	1.08	0.11	1.04	1.09	1.13
Weighted FF industry risk premiums (%)	5.55	0.52	5.38	5.63	5.82	5.70	0.31	5.56	5.73	5.93	5.50	0.57	5.32	5.58	5.78

Source: Ljungqvist & Richardson (2003). SD, standard deviation.

**Table 17.5** Risk, performance, correlation and betas of European private equity (I)

Returns (%)	Venture capital	Buyouts	Equities
Average	11.3	9.9	7.7
SD	34.0	10.0	20.6
Correlation matrix			
VC	1.00	0.33	0.50
BO	0.33	1.00	0.11
Equities	0.50	0.11	1.00
Beta			
Vs. equities	0.83	0.06	1.00

Source: Arthus and Teïletche (2004) and own calculations.

**Table 17.6** Risk, performance, correlation and betas of European private equity (II)

Returns (%)	PE (equity reinvestment)	PE (bond reinvestment)	MSCI Europe
Average	9.8	8.1	11.5
SD	19.0	9.0	18.1
Correlation matrix			
PE (equity reinvestment)	1.000	n.a	0.897
PE (bond reinvestment)	n.a.	1.000	0.039
MSCI Europe	0.897	0.039	1.000
Beta			
Vs. MSCI Europe	0.943	0.019	

Source: Kaserer & Diller (2004) and own calculations.

*process*”, based on an autocorrelation analysis. The authors themselves acknowledge that the results obtained did not lead to a fully satisfactory solution.

Kaserer & Diller (2004) complemented the study of Arthus & Teïletche (2004) by focusing on individual cash flows, which are not impacted by the smoothing process and therefore do not require any correction. To obtain time-weighted return, they constructed a benchmark for returns, based on the assumption that the distributions are reinvested in either quoted securities or bonds.

The results obtained from these two studies, although quite interesting, most probably created other imperfections through their corrections and adjustments. We do not believe that these results can be used in order to estimate VC fund discount rates. However, it is worth stressing that when the data are corrected, the betas of VC tend to come closer to 1, further supporting the conclusion that VC is not much different from public equity.<sup>17</sup>

### 17.3 THE ALTERNATIVES TO THE CAPITAL ASSET PRICING MODEL

Other models besides the CAPM exist, such as multi-factor models. But as they are more complex and often require more input or analysis, we believe they will bring no more insight into the VC funds discount rate discussion. Furthermore, we are not aware of any analysis

<sup>17</sup> As in Weidig & Mathonet (2004).

based on other models. However, as alternatives to the CAPM, we have considered two: the opportunity cost of capital and the historical performance.

### 17.3.1 The opportunity cost of capital

The discount rate is also called the “opportunity cost of capital” because it is the return foregone by investing in funds rather than investing in other securities. Therefore, an alternative way to estimate a discount rate is by using the rate of return expected by investors in any securities of similar risks. As most of the investors give an allocation to private equity funds to the detriment of public equity, the return to this asset class can be used for estimating a minimum required discount rate.

One common pitfall is to add “fudge factors” to the discount rate obtained via public equity, to offset things that could go wrong with the proposed investment but cannot be measured, i.e. the uncertainty. The right approach is to think about the determinants of betas. Often, as in the case of VC funds, the characteristics of high- and low-beta assets can be observed when the beta itself cannot, e.g. by analysing the industry sectors that compose the portfolio (see Ljungqvist and Richardson, 2003). Another approach is to try to identify specific public equity indices that are closer to the risk profile of the VC funds in portfolio, such as small cap or industry sector indices. In Table 17.7 we have presented some of these indices and their annual return. Not surprisingly, these indices have historically yielded different returns. Therefore, depending on their portfolio composition, investors may want to use different minimum required discount rates.

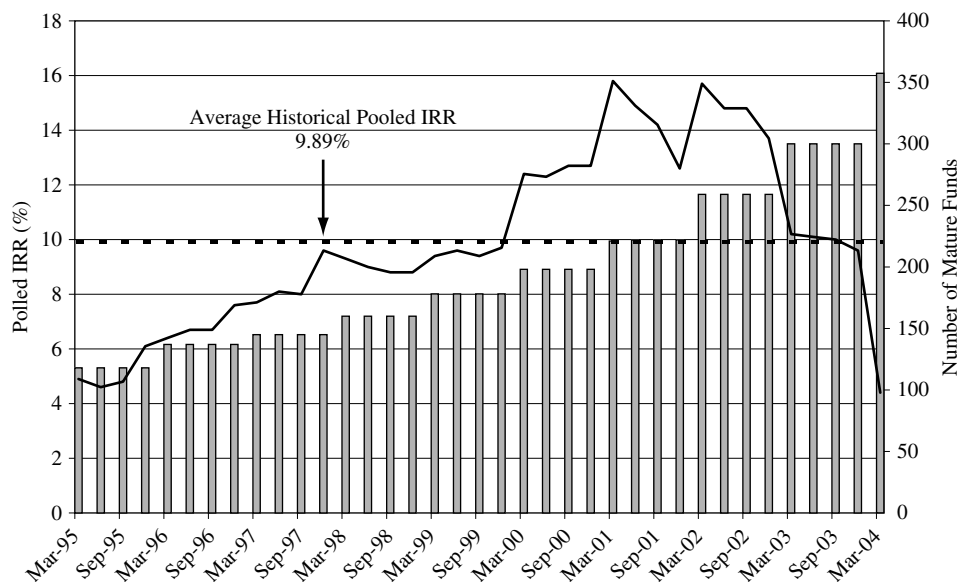
### 17.3.2 The historical performance

For the opportunity cost of capital, we used the historical performances of the asset that are perceived as the alternative to private equity funds to estimate the discount rate. However, as we do have statistics for funds, it is worth looking directly at their historical performance, which could then be used as discount rate. For funds, there are several problems with using such an approach. First, there are not sufficient data in terms of quantity and quality. Indeed, there are no time series available and the relatively short period covered appears insufficient to provide acceptable statistics. Furthermore, there is no efficient pricing mechanism in this market. However, it is worth looking at the funds’ historical performance, which will at least provide some indications. In Figure 17.4, you will see the evolution of the historical pooled IRR for mature funds. Mature funds are funds whose vintage year is 5 years before

**Table 17.7** Public equity—historical performance

Countries	Index	Beginning		Ending		Annual return (%)
		Date	Price ( $\theta$ )	Date	Price ( $\theta$ )	
France	CAC 40	Dec 87	1000.0	Dec 03	3557.9	8.26
Germany	DAX	Dec 87	1000.0	Dec 03	3965.2	8.99
UK	FTSE 100	Dec 87	1712.7	Dec 03	4476.9	6.19
US	S&P 500	Dec 87	247.1	Dec 03	1111.9	9.86

Source: Bloomberg (December 1987–December 2003).



**Figure 17.4** Mature European VC funds—pooled IRR  
Source: Thomson Venture Economics (VentureXpert database).

the measurement year (e.g. in 2004, up to vintage year 1999). As of March 2004, the IRR was 9.89%. With a risk premium of 5% and a EUR risk free-rate around 4%, such an IRR implies a premium over public equity of 89 basis points.

## 17.4 SUMMARY AND CONCLUSION

In this chapter, we have tried to estimate the discount rate for private equity funds. First, we analysed the standard approach proposed in the financial literature, the capital asset pricing model and its application to funds. Due to its specificities, this approach can only be directly applied to a very small segment of the private equity market, the so-called publicly traded private equity. For the rest of the market, the CAPM can only work under specific assumptions about the nature of risk, or by aggregating the betas of the portfolio companies, or after the modifications and corrections of the performance data. In our views, none of these approaches provides fully accurate results for private equity funds. We next reviewed two alternatives to the CAPM, namely the opportunity cost of capital and the historical performance approaches. Although filling gaps in the fund discount rate puzzle, these alternatives also fail, in our view, to provide final answers.

It is important to correct the often-wrong perception that venture capital is a highly risky investment and that, therefore, it should and will yield high returns.<sup>18</sup> While it is true that venture capital carries more total risk than many other asset classes, this difference becomes

<sup>18</sup> At the individual start up firm, an increased discount rate is often used as a fudge factor to account for the high failure rate of the venture investments. In other words, instead of adjusting in the numerator of the DCF, part of the adjustment is through the denominator. While this is common market practice, such an approach has little theoretical foundation and is in our view questionable for funds.

less important when the focus is on the only risk that matters for a diversified investor, i.e. the systematic or undiversifiable risk. Although the discussion about discount rate is far from being closed, we believe that we have gathered sufficient evidence to state that VC funds are probably not very different from public equity. Furthermore, as the market does not allow finding a one-size-fits-all type of answer, investors should analyse their specific situation and use their judgement to come up with acceptable discount rates.

Different discount rates could be used, depending on the context. For overall portfolio valuation purposes, one discount rate for all positions could be sufficient. While such an approach will most probably lead to an inaccurate result for each fund, it can be fully acceptable at a portfolio level, where individual errors will level off. Knowing that most investors have as their target to beat public equity markets, a discount rate at the level of the public equity market plus a risk premium in line with the betas estimated above should be used. A reasonable range appears to be 100–300 basis points.

For portfolio management purposes, and especially in the case of a secondary transaction, we suggest using more specific discount rates that will better capture the risk profiles, focusing notably on the geography and the industry sector profiles. Finally, we do believe that, as most of the investors in private equity funds are large and long-term investors, the discount rate should not be increased by a liquidity premium.<sup>19</sup>

---

<sup>19</sup> There is a growing literature on the role of liquidity in security pricing and some authors argue for a liquidity premium. In our opinion, it is a major issue in direct private equity but less so for funds (see also the arguments put forward by Inderst & Muennich (2003) on the role of the constrained financing in the context of VC funds).





**Part IV**

**Management Tools**



## Monitoring

Private equity and venture capital are forms of alternative investment that require qualified and knowledgeable investors and considerable monitoring effort. It is an obligation of limited partners in the context of a fund's corporate governance to approve procedures and processes and, especially, to validate valuations. The only way to master risk and also to decrease the probability of actions not in the interests of the investors, or even fraud,<sup>1</sup> is to keep in touch with the funds and understand what they are doing and where they are heading.<sup>2</sup> The assessment of alternative assets is mainly based on the expertise, professionalism and integrity of the limited partners. Limited partners cannot hide behind information provided by the fund managers. They must be able to give a personal and informed opinion about the state of affairs, the development and the position of the fund.

Investors in private equity funds typically consider that little can be done once the due diligence has been completed. They aim to prevent the possibility of harmful actions mainly through the alignment of interests, through limiting the scope for conflicts of interests, and through having the correct incentive structures. Of course, the investment's selection and structuring is crucial, but the monitoring or the lack of it can often make a difference. Only at the end of the fund's lifetime can it be confirmed whether or not the investment was successful. However, as in such a long-term business due diligence findings become obsolete, and as the economic environment is continuously changing, the balance between investors' and fund managers' interests can be fundamentally altered. The hidden information and moral hazard problems associated with such changes can be lessened through monitoring.

*Our biggest mistake has probably been not having reacted aggressively enough when we have noticed that a fund has drifted from its investment area or there has been a change in the implementation of a strategy by a private equity firm. It's important when you see that something is going wrong that you react incisively. In extreme cases, your best course of action is to sell. However, if you react after the event, when the bad news is already out, then it's very difficult to sell. What we have learned over the years is that the due diligence process is only part of what we do. We have to manage a portfolio actively, we have to be close to the investment managers.*

Christophe de Dardel, SECA-News (2003)

The investor's involvement differentiates private equity from other asset classes. Limited partners have to be concerned with how effectively and efficiently the general partners safeguard their investment. Indeed, in various situations the fund managers can further their interests at the expense of the investors, e.g. they might take undue investment risk or charge

<sup>1</sup> Private equity is exposed to several problems related to the agency relationships, notably a "moral hazard" problem, as investors contract with a fund manager who is better informed about his actions, i.e. choice of effort and choice of risk and a "hold-up" problem, as investors contract with fund managers with greater bargaining power post-commitment. This explains why, post-commitment, the monitoring is so important.

<sup>2</sup> According to EVCA's secretary general, Javier Echarri (see Real Deals, 2004a), "Historically, transparency has been the only basis for the relationship between GPs and LPs. You have negotiating terms in the LP-GP agreement of how much information you are going to give and you have industry guidelines on reporting and valuation. Additional transparency exists because any LP can call any GP at any time. Your investors are just a phone call away".

excessive management fees, while spending too little effort monitoring and advising portfolio companies. They may also resolve potential conflicts not in the interest of the specific limited partner.<sup>3</sup>

## 18.1 APPROACH TO MONITORING

Monitoring is primarily about routinely and systematically collecting information in a planned and organised way. One of the interesting results of a study undertaken by KPMG (2002) together with the Manchester Business School was the frequency with which UK private equity managers used the word “monitoring” when discussing their dealings with portfolio companies. The study found that the “monitoring” usually done by fund managers describes a rather passive, reactive process focused on historic financial information. Furthermore, according to Robbie, Wright & Chiplin (1997), limited partners typically engage in few monitoring actions. The authors expected this to continue, as a more proactive approach to monitoring often raises questions about its cost-effectiveness.<sup>4</sup>

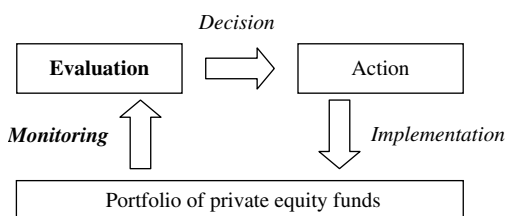
*What is clear is that all houses adopted a non-interventionist approach to portfolio management unless problems were experienced and precipitated the need for greater involvement.*

KPMG (2002)

### 18.1.1 Monitoring as part of a control system

Reducing the monitoring entity’s task to giving warnings so that problems can be avoided is a narrow view. Instead monitoring should be seen as part of a control system (see Figure 18.1) within the investment process. It is an activity aiming to observe, verify, control and make the portfolio behave in a desired way.

While monitoring, in the sense of information-gathering, is routine and ongoing, evaluation is an in-depth study, taking place at specific points in the life of an investment. Evaluation uses the information to make judgements about the progress of a private equity fund and, when needed, to make changes and improvements. The monitoring process is about identifying problems and developing a plan to address them. Because of the illiquidity of a private equity fund, the investor’s ability to react to monitoring findings will be limited. In many situations it will require finding a consensus with the fund manager and the other co-investors or building alliances with co-investors to exercise pressure and act jointly.



**Figure 18.1** Control system

<sup>3</sup> For example, in the context of several funds managed in parallel or when offering co-investments. In such situations there is a risk that the most attractive opportunities are reserved for “preferred” limited partners, to the detriment of other investors.

<sup>4</sup> The rather passive approach of most limited partners may be explained by the relatively immaterial share of venture capital in most of the institutions’ portfolios.

### 18.1.2 The trade-offs

Determining the appropriate approach and intensity of monitoring is not trivial. Investing in and monitoring private equity investments involves more effort than an equivalent quoted investment and will give rise to extra cost. Such costs need to be weighted against the potential benefits. Turning the monitoring findings into management actions and finding the right time and degree of intervention poses a dilemma. A high intensity of monitoring and the associated interventions can effectively dilute the fund manager's responsibility.<sup>5</sup> Private equity in particular requires the long-term view<sup>6</sup> and limited partners should avoid overreacting to the inevitable bad news, especially during the early years of a fund's lifetime. On the other hand, the private equity investor's reaction, when necessary, is typically "too little, too late" and often cannot avert further deterioration.

*Investors and others involved have to be comfortable to look beyond the interim figures. They have to let the GP work through to the finish line. They have to be patient.*

Heppner, The Crossroads Group, quoted in Alt Assets (2003b)

The limited partnership agreement's terms and conditions in many ways reflect a trade-off in various dimensions. It is neither possible nor meaningful to describe in every single detail the behaviour of the general partner over a time-frame of 10 or more years. Market conditions fluctuate, fund management teams evolve, co-investors change, investments do not materialise as planned, and new opportunities arise. Limited partners can come to the conclusion that certain conditions were overly restrictive and may effectively work against their interests, while other issues have not been addressed in sufficient detail. The monitoring exercised by the investors needs to bridge this gap. It is fair to say that a significant part of the monitoring is the on-going management of trade-offs.

## 18.2 THE MONITORING OBJECTIVES

While monitoring is an important instrument to assure compliance with the limited partnership's terms and conditions and to gather information, a fund's performance is not necessarily linked to this effort. Monitoring of a private equity fund should not be confused with the management of portfolio companies—an activity in which, in accordance with industry practices, limited partners have no involvement. The limited partner is managing his portfolio of funds and is monitoring the fund managers.

<sup>5</sup> In the extreme, due to a too-intense monitoring and intervention, the limited partners may be reclassified as general partners and lose their limited liability.

<sup>6</sup> See Venture Economics (1988): "Short-term performance targets can lead to:

- Game playing with valuations of private equity holdings by either delaying write-downs or writing up investments sooner.
- Game playing with return calculations to present performance in the most favourable light. Putting more money into troubled investments to avoid write-offs.
- More investments in deals offering a faster payback or providing current interest income, rather than longer-term investments with greater upside.
- Pressure for early harvesting of investments through premature initial public offerings or acquisitions.

*Quite basically, a short-term performance orientation can lead to 'quick hit' investment strategies that seldom produce sustainable high returns".*

### 18.2.1 Protecting downside

Limited partners monitor the fund managers to minimise risks. Unlike most other investors, limited partners cannot easily withdraw their commitments. In conventional asset classes reducing risks means moving money into safer investments. With follow-ups on monitoring activities, a limited partner may be able to cut the downside if severe shortcomings are identified, e.g. through restructuring or selling the position on the secondary market, but this cannot bring an upside.

Investments are done in the context of a general portfolio strategy. As a result, monitoring is related not only to individual funds but also to the limited partner's overall portfolio composition. Monitoring is relevant for assuring style discipline. While style tracking is not as applicable as in the hedge fund industry context, limited partners nevertheless need to assure that fund managers stay within the confines of their core expertise and "style". Limited partners should be concerned if, all of a sudden, a private equity fund changes its strategy. Indeed, a style shift may have serious consequences for the risk–return profile of the fund and can create unexpected exposure for limited partners.

#### Box 18.1: Style drift

Traditional mutual fund managers have mandates that clearly outline what they have to do. In the hedge fund industry, however, investors are well aware that there is a risk of "style drift", as hedge funds have no benchmarks against which they are compared. Here style tracking is an important monitoring activity, as the risk–return profile of a portfolio of hedge funds is altered if individual hedge funds change their strategies, and because several hedge funds might aggregate an over-exposure to certain securities.<sup>a</sup>

Also, in private equity, fund managers explain their investment practices and their strategies during the due diligence pre-investment. Limited partners expect them to be reasonably consistent in following them. However, adherence to a stated investment style may not always hold true in the world of private equity funds, where secrecy and flexibility is a critical success factor. Cumming, Fleming & Schwienbacher (2004) researched this issue and found that in private equity style drifts are more common than perceived.

In order to alleviate the risk of style drifts, the upfront design of the limited partnership agreement is important, as the covenants guide the behaviour of the fund manager. Because of the "blind pool" nature of private equity fund investing, it is crucial for limited partners to set the risk profile of their investment at the time of commitment. Moreover, in the case of a private equity fund, the position is illiquid. Therefore, the limited partner cannot easily adjust portfolio holdings or rebalance if general partners undertake actions that are inconsistent with governing documentation. Of course, there is also a risk in adhering too closely with a declared investment strategy even if market conditions have significantly changed, and fund managers are given flexibility to increase the pool of potential investments as opportunities change over time. If a fund manager is mandated to invest only in a single sector, this may result in pressure to put money to work at an unprofitable time of the cycle. Part of the shift is also natural: later in the entrepreneurial cycle, venture capital funds do follow-on financing rather than seeding new companies.

<sup>a</sup>In private equity this is not considered as much of a problem, as they cannot invest to such a degree into the same companies as in the case of hedge funds. Moreover, we believe that selection skills and commitment management are of higher relevance for the return of a portfolio of private equity funds.

On the other hand, their motivation could also be potential window-dressing, such as moving to later stages to create earlier exits.<sup>b</sup> It may also help to camouflage substandard investment management by achieving greater diversification within the fund in order to minimise risk of failure by increasing the chances of not under-performing peers.

*But we also like our managers to be opportunistic when the need arises and clearly there are exiting possibilities overseas.*

Brian D. Isroff, Sterling Private Investments, Inc.

For example, fund managers can shift their focus from buyout to venture capital or vice versa. Also, looking for investment opportunities in other countries is not uncommon. Changes in style are often observed for geographical focus or between buyout and venture capital. Skill sets required for fund managers and investment objectives of buyouts and venture capital funds differ in important ways. While related, the two fields are sufficiently distinct to make the transfer of skills difficult. Brull (2002) refers to “*buyout firm Hicks, Muse & Tate as the poster child for failed diversification in private equity . . . Although this was a respected buyout firm straying into high-tech investing, some fear that the same thing could happen to a VC outfit entering an ill-conceived buyout deal*”. There is anecdotal evidence that venture capital funds that raised too much money could not resist the temptation to put money to work in buyouts, rather than returning unutilised commitments to the investors.<sup>c</sup> As deal flow is drying up, fund managers often consider other markets. US funds may look for investments in Europe and European venture capital funds, occasionally try to get access to Silicon Valley. Limited partners see this with scepticism,<sup>d</sup> because—particularly in the case of venture capital—hands-on involvement of the fund manager is essential. Moreover, investors are exposed to foreign exchange rate risks they have previously not factored in.

There is a trade-off in terms of costs and benefits to private equity style drift, and there is no easy answer as to how to deal with such issues. Experienced fund managers will not do such shifts light-heartedly, as this also exposes them to significant risks. There is, of course, the financial risk of the fund’s portfolio itself, as managers are not investing within their areas of expertise. Their reputation could be seriously affected if the “drift” turns out to be unsuccessful, and would inhibit the fund manager’s ability to raise follow-on capital. Moreover, they could potentially be faced with litigation for breach of the limited partnership agreement.

To avoid the problems, a fund manager could partner with other firms instead of trying to branch out into new activities. From the viewpoint of its investors probably the best solution would be if the general partner were to de-commit funds that cannot be profitably put to work, or reduce the size of follow-on funds. Being open to new opportunities in a changed environment makes sense, but limited partners should monitor this closely and follow up to inhibit potentially risky shifts in style. Managers who significantly change portfolio composition and deviate from the declared style should be put on the “watch list”.

<sup>b</sup> See Cumming, Fleming & Schwienbacher (2004), who specifically examined shifts in allocation to investment stages.

<sup>c</sup> Likewise in buyouts; see Henderson Global Investors (2002): “*The opportunistic buoyancy of sentiment upon which many of today’s large private equity funds were raised has contributed to the ‘style drift’ (e.g. CLECs, PIPEs, IT incubators) and subsequent portfolio problems evident amongst some of the highest profile managers in the asset class*”.

<sup>d</sup> According to William Stevens, CEO of Europe Unlimited Venture Capital, “*U.S. VCs have become less active in Europe because LPs are less willing to give them money. They are saying: ‘Things are bad [in the USA], why should we give you money to invest in a region you know less about and where we can’t monitor the investments as closely?’*” (quoted in Fugazy, 2002).



### 18.2.2 Creating value

For direct investments venture capitalists have the ability to maximise returns.<sup>7</sup> For fund investments the management of the upside is, to a large degree, delegated to the fund managers who are given the appropriate incentives. This underlines the importance of selecting the right teams. While the general partner can predominately create value at the individual private equity fund level, the limited partner can create significant value through monitoring activities at the portfolio of funds level:

- Intensive contact with the fund managers is important to decide whether to invest in a follow-on fund. It improves the due diligence and can lead to a quicker finalisation of contracts, with improvements based on the previous experience with the fund manager. Moreover, it allows building contacts with junior team members ready to spin out and set up their own fund.
- The study undertaken by Lerner, Schoar & Wong (2004) suggests that investors owe their success to superior reinvestment skills. The authors specifically refer to the example of endowment funds. These were found to be less likely to reinvest in a partnership, but if endowments decided to invest in the follow-on fund, its subsequent performance was significantly better than those of funds they let pass. This finding underlines the importance of monitoring for improving decision-making.
- Networking and liaison with other limited partners is an important instrument for gathering intelligence on the overall market and getting to know about other funds.<sup>8</sup> This helps to get access to deals that otherwise would not appear on the institution's "radar screen". It can also help to get access to secondary opportunities well in advance and, therefore, to avoid the less favourable auction process.
- In the context of a co-investment strategy, monitoring is important for screening interesting opportunities.
- Lessons learned out of the monitoring can be applied to improve the due diligence and the selection of new investments.
- Finally, as discussed in the chapter on liquidity management, privileged access to information allows a limited partner to optimise the management of commitments and treasury assets through more precise cash flow forecasting.

## 18.3 INFORMATION GATHERING

The private equity sector is called "private" for good reasons, and transparency has its limitations. The typical monitoring process follows a dual approach (see Figure 18.2), separating formal from informal reporting. There is a tendency for larger players to differentiate between obtaining specific qualitative data by direct interaction with the investment managers and quantitative or standardised data provided by a back-office.<sup>9</sup> As the reporting quality and detail is quite varying between different funds, the monitoring needs to focus on "filling the gaps". One needs to strike an appropriate balance between the provision of specific

<sup>7</sup> See Bygrave, Hay & Peters (1999).

<sup>8</sup> Being perceived as a professional and serious investor also increases negotiation power *vis-à-vis* the fund managers. In a comparatively small industry, a strong network is a credible "threat" against a team that otherwise would be unwilling to compromise.

<sup>9</sup> According to Diem (2002), the vast majority of limited partners "agreed that the most valuable information is acquired by nurturing personal contacts between LP and GP, which was also considered to be the only feasible way of overcoming data availability".

information to limited partners and standardised information, otherwise the risk of reporting overload is significant. Probably the best way of approaching it is just trying to do better than “the rest”. Monitoring therefore also needs to keep an eye on the limited partner’s competitors.

*Too much information is no information at all and too little is likely to mislead.*

Brett (2002)

### **Box 18.2: Transparency**

Private investments are generally exempt from registration with authorities such as the SEC in the US, the FSA in the UK, or the COB in France. Thus, the development of valuation and reporting standards in private equity is not primarily driven by regulatory bodies, but by the industry players. The appearance of being unregulated is the by-product of a careful balancing of specific exemptions from certain aspects of regulation, and from venture capital associations’ sustained effort to maintain high standards of investment conduct by private equity fund managers. In the USA, private equity fund managers, like hedge fund managers, rely upon the same exemption from registration under the Advisers Act.<sup>a</sup> Because of the lack of a clear delineation between hedge funds and private equity funds, there is the possibility that, at some point, hedge fund regulation may have an impact on private equity transparency as well.

Disclosure of fund status and performance would cover information at the level of commitments, contributions and distributions to date. Investors are particularly interested in valuations and in IRRs. However, there are various questions:

- Limited partners may exercise pressure on the fund managers to invest more quickly if commitments—and the associated management fees—are high but, due to lack of market opportunities, little investment is done.
- Associated with the IRR, how and against which benchmark can the J-curve impact be assessed? Ultimately this is driven by the NAV, which is often largely unrealised. Moreover, different funds—sometimes in line with different accounting standards—assign different values, write-downs and provisions to the same investment.
- As poor interim performance will hinder the ability to raise new funds, uncommented disclosure will bring in short-termism to an asset class where patience is a critical success factor.

The disclosure of terms or the identity of limited partners also raises concerns. Fund terms are usually the result of negotiations, and represent a trade-off rather than an optimum. Information on the limited partners may reflect their approach and track record, attract competition, or help competitors to replicate their strategy. Disclosure of a fund’s detailed portfolio breakdown and portfolio company information, with stakes in individual companies, their sales figures, margins, management issues, business plans, liquidity, restructuring initiatives or risk assessment, is generally seen as particularly

<sup>a</sup>See Collins (2004): “The SEC report proposed to amend this exemption to require hedge fund managers to register under the Advisers Act. Yet the SEC did not differentiate hedge funds from private equity funds. The SEC also raised concerns about valuations of illiquid securities, inconsistent reporting standards and potential conflicts arising from incentive fees to managers. All of these issues are present not only in the case of hedge funds, but also in the case of private equity funds.”

sensitive.<sup>b</sup> This information may harm the prospects of a company if made available to competitors, customers, suppliers, or employees, as it may have a negative impact on funding sources or potential acquirers.

In the USA, for public institutions like state pension funds or public university endowments, an additional issue is disclosure under the Freedom of Information Act (FOIA). Public bodies often (but not always) do not have to disclose when they are bound by confidentiality agreements with business partners, as typically foreseen in limited partnership agreements. Investors fear that their access to top-tier private equity and hedge funds would be severely limited if they are obliged to make investment data available under the FOIA. It was heard that fund managers give preference to investors who are not subject to public disclosure requirements. A number of states have amended their FOIA statutes to exempt certain private equity-related information. Under these amendments, public institutions would not be obliged to disclose information such as portfolio company trade secrets, business strategies and valuations. Beneath the return data is information<sup>c</sup> about immature companies—sales figures, income, management and trade secrets—that, if publicly available and wrongly interpreted, could damage a portfolio company's prospects and, as a result, have a negative impact on the value of the fund's investment. Also, investment data on the fund level, such as IRR figures, in isolation can be highly misleading and even damaging. To assess a private equity fund, a series of criteria need to be taken into consideration; this is not possible without expertise. Some states try to limit public disclosure to the names of the funds in which it has invested, the aggregate amount of money it has invested in such funds and the aggregate rate of return on such investments on an annual basis. Another option is holding face-to-face meetings and relying on oral communication to prevent compromising data from getting into the hands of public institutions and eventually becoming subject to a FOIA request. Also "review and return" policies are in place, where information can be supplied to investors with a request for its return after it has been reviewed.

It is likely that at regular intervals new spectacular corporate collapses will result in pressure for more transparency. Standard setters and regulators start with the most important investment classes in the financial system and declaredly tackle specificities of more "exotic" instruments in due course. The debate is likely to continue, and reality will force the pendulum back, as alternative assets are, by definition, a niche activity where "one-size-fits-all" approaches do not work.

As a consequence of information not freely available, investors should earn a premium over quoted markets.<sup>d</sup> Conversely, the more private equity information becomes available, the further returns will fall towards quoted market norms. Public disclosure of private equity information will change fundamental drivers of the industry. As the inefficiency

<sup>b</sup> See Real Deals (2004a): According to EVCA's secretary general Javier Echarri, "Disclosure at portfolio company level, however, will be completely counter-productive to those companies, as any evaluation has to take into account the firm's ability to exit. Fortunately, there have been court decisions in the US against portfolio company disclosure and against the disclosure of the terms and conditions of the LP-GP agreements . . . But should the pressure continue, the risk is that the best-performing GPs will exclude some public investors, such as public pension plans in the US, in order to keep their results private".

<sup>c</sup> See Metzger & Greenwald (2004): according to the Michigan FOIA statute, "investment information" is defined as information that is not "publicly disseminated or that is unavailable from other sources, the release of which might cause the private equity fund or the public university significant competitive harm".

<sup>d</sup> According to INVESCO's Ray Maxwell, "private equity returns should be higher than the quoted markets to compensate for information and liquidity risk. If information is more freely available, then it is axiomatic that returns will decline" (quoted from Littlejohn, 2003).

of the market is also caused by non-transparency, forcing public market-like transparency would create public market-like returns, and would also lead to the emergence of another, unregulated, “really private equity” funds asset class. The top funds do not need public funding and therefore private investors would shy away from getting together with the public sector. The current level of transparency adopted by the industry reflects a trade-off between limited partners as investors and the general partners as fund managers, that aims to answer to transparency needs while preserving the industry’s arbitrage opportunities.

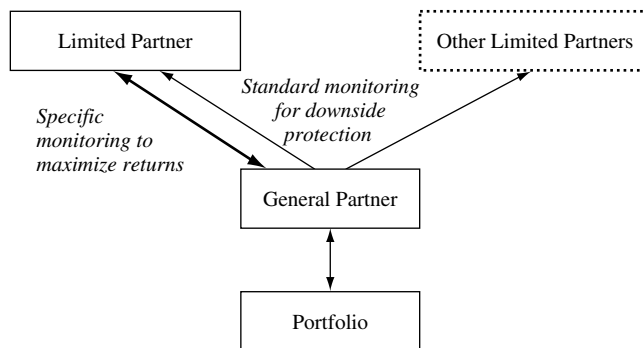
The information required for the management of the portfolio is, in principle, the same as that needed for the investment decision, i.e. information gathered through the due diligence. It is supplied by the fund managers but also collected from outside sources.<sup>10</sup> While a significant amount of the information required for monitoring should be provided in a low-cost standardised manner, proprietary information can lead to a competitive advantage. For example, some limited partners conduct quarterly conference calls to compile estimates from the fund managers, which are used to improve cash-flow forecasting for liquidity and commitment planning.

*... information about the quality of different private equity groups is more difficult to learn and often restricted to existing investors.*

Lerner, Schoar & Wong (2004)

### 18.3.1 Standard monitoring

Monitoring is built on the funds’ reporting. Therefore, reliable, appropriate and timely management information is crucial. Venture capital associations’ reporting guidelines, such as those issued by EVCA, BVCA or AFIC, define the standard level of information to be provided. Generally, investors in private equity funds complain about the unsatisfying degree of disclosure, the apparent inconsistencies between reports, and the often significant time-lag before receiving this information. Major problems going on in a portfolio company



**Figure 18.2** Monitoring process

<sup>10</sup> Also, the administration of capital calls and distributions offers opportunities to conduct monitoring, as in this context contractual terms need to be checked.

eventually appear in the reporting. But often by then the damage has been done and little corrective action remains possible. This raises the question of whether large institutional investors could become more active or proactive in addressing the following issues:

- Incomplete information creates uncertainty and consequently increases risks. Should institutions—possibly together with venture capital associations like EVCA—persuade industry players to provide more detail and transparency in the reporting?
- Transparency in reporting is tied to the question of valuation and risk. Can investors get a “truer and fairer” view of its investments through more detail and better quality investment reporting?
- Should the industry improve the quality and especially the timeliness of reporting, e.g. by introducing an electronic reporting standard?

### **Box 18.3: Standard reporting**

There is an overall agreement among all industry players that formal accounting-related information should be standardised. EVCA guidelines are seen as sufficient in general, but in a study conducted by Diem (2002), most of the interviewees saw these reporting guidelines as quite vague and of limited use for other purposes, such as risk management. The information reported depends very much on the general partner’s willingness to disclose this information in its reporting framework.

## **REPORTING DETAIL**

However, limited partners considered the establishment of a reporting standard to be insufficient to fulfil their individual information requirements. It is believed that the most value-adding information to portfolio management can in any case be acquired only informally.<sup>a</sup> Limited partners claim that they follow a unique approach and consider their informal relationship as a competitive advantage. Since they have a good informal relationship with their general partners, they are able to gather the information relevant to them. Every additional piece of relevant information included in a standard would diminish their ability to judge the market in a superior way, which as a consequence implies that their relative advantage is reduced.

A too-rigid reporting format may also be detrimental, as private equity uses a series of complex financial instruments that are continuously evolving. The attempt to improve entropy by including additional qualitative information is seen as futile. There will be a series of exceptions that work against the underlying systematic approach.

## **REPORTING TIMELINESS**

An increase in reporting frequency, possibly supported by an electronic reporting standard, was considered to be not beneficial but counterproductive, first due to the illiquidity of private equity funds and second, because it does not help to identify long-term trends.

<sup>a</sup> See Diem (2002): “*I don’t think that you can do anything with standards . . . The real value is to talk to the GPs personally on how the companies are doing. This is where my value added is coming in*”.

Because of the illiquidity, limited partners often do not really care about delayed reporting because they cannot trade on the information anyway. In any case, valuations depend on estimates and assumptions, and calculations based on this will always take time.<sup>b</sup> The trade-off is between the valuation's precision, i.e. trying to minimise the error, vs. the valuation's "currentness". For a buy-and-hold investment, short-term fluctuations will normally have no material impact on the terminal wealth. Also, in public markets rating agencies react with significant delays. Typically financial markets live with this.

Limited partners differentiate between on-going reporting and *ad hoc* queries. For on-going reporting the general partners are allowed 60–90 days for quarterly reporting.<sup>c</sup> For *ad hoc* queries, information is typically needed instantly or within 24 hours at the latest.

<sup>b</sup> See *The Economist* (2004a).

<sup>c</sup> For the USA, a 45–90 day time-lag for reporting accounting and performance data is typical (see Maginn & Dyrda, 2000).

While one is inclined—especially when thinking about public markets—to always respond with a clear “yes”, it needs to be kept in mind that private equity is “private” and that there are legal and practical obstacles. Based on our analysis, we conclude that the answers to these questions need to be seen against the background of the private equity market's dynamics and from a cost–benefit viewpoint:

- In private equity, information collection and analysis comes at often prohibitive cost and there are market forces that work against transparency.<sup>11</sup> Any attempt to go against these dynamics would be expensive, take a long time, and may ultimately be of no avail.
- The huge information asymmetry in private equity explains and justifies the need for intermediation. An increased level of detail will not allow a non-expert to verify the fund manager's appraisal. Moreover, due to its “fuzzy” character, any qualitative information is, by definition, of “low” quality. If one does not want to rely on the intermediary's judgement, the only alternative is direct investing, which, however, requires an entirely different approach and skill set.
- As private equity fund investments are buy-and-hold and illiquid, a fund's limited partners are unable to react quickly to new information. Moreover, for such a long-term-oriented investment, short-term developments do not, most of the time, materially affect the fund's valuation.

We conclude that while a higher degree of transparency would be desirable, the public market cannot be seen as the benchmark. It is mainly the limited partners' monitoring that can overcome the non-transparency of this asset class and the reporting time lags.

### 18.3.2 Specific monitoring

General partners tend to limit the information made available and are extremely reluctant to disclose all information. Their dilemma is obvious: on one hand there is an obligation to

<sup>11</sup> We expect information aiming on downside protection more likely to be standardised and be shared among all limited partners. At the end of the day, to remove the fund manager, a majority of the limited partners is required. Therefore, it is in all investors' interests that everybody knows how the portfolio is doing.

disclose information so that the investors are able to understand the portfolio's progress,<sup>12</sup> but on the other hand further information, especially at a level of detail that allows an independent risk assessment, potentially reduces the chance that the limited partners commit to follow-on funds. There is also an investment rationale for a high degree of confidentiality. Indeed, a fund with a niche strategy that consistently yields above average returns will attract competition. General partners fear that too much information given to the outside helps to imitate their strategy, access their deal flow or jeopardise their negotiating position. It can also have a negative impact on the routine investment activities. Cullen (2004) gives an example where a limited partner was given financial information that was then shared with a competitor and the fund subsequently lost the deal.

*It is difficult to think of a situation where an illiquid investment is made and the level of interest and involvement is limited to receiving only information once or twice a year . . . The one who supplies the capital will estimate the risks involved and, on the basis of that estimate, determine which instruments for the control of those risks are needed.*

Toon Nagtegaal (quoted in Bygrave, Hay & Peters, 1999)

Moreover, if disclosed to a wider audience, information can be highly damaging. It may have an adverse impact on the trading ability of a portfolio company as it could lead, for example, to shortened credit lines. Also a portfolio company's potential clients may choose to partner the competition. Conversely, news of success may breed competitors. In the extreme, the fund manager might even be sued for disclosing harmful information.

Interestingly, however, it is not only the fund managers but also the limited partners who are not interested in too high a degree of transparency. Making "star funds" public knowledge may bring in competitors. Limited partners need to protect their privileged access to follow-on funds or to new teams that set up an own vehicle outside the old fund. As especially private equity funds are not scalable, it may lock some limited partners out of follow-on funds because, as suggested by Lerner & Schoar (2002), general partners generally have a preference for "deep pocket investors".

## 18.4 EVALUATION

The analysis of the underlying portfolio companies is required as the basis for the expected performance grading that forms the input to the GEM approach for the valuation of the fund. The grading aims to identify deviations of a fund's returns from peers and major deviations from historical returns. Standardised and consistent monitoring of the overall market needs to be applied over an extended period of time.

The expected performance grades are complemented by operational status grades. Operational status grades capture information that is conceptually close to event risk. They relate to events during the lifetime of a private equity fund that were unknown pre-investment, but are considered to have an impact on the private equity fund's expected return. Typically, such events have an adverse rather than positive effect. The event—unless a mitigating action follows within the short to medium time-frame—is expected to have a negative impact on a private equity fund's performance. We also suggest four grading classes for the operational status grade, depending on the severity of the operational issue (see Table 18.1).

<sup>12</sup> Robbie, Wright & Chiplotin (1997) stressed the importance of developing relationships with limited partners through more frequent direct personal communication that continues over the life of a fund, and through identifying their information needs.

**Table 18.1** Definition of operational status grades

Operational status grade	Description
Neutral	No adverse signals or information so far
Problems	Presence of signals or information that, if no appropriate measures are quickly put in place, would be atypical for a first-quartile fund. Absence of signals or information that would be inconsistent with an expected second-quartile performance
Failure likely	Presence of signals or information that, if no appropriate measures are quickly put in place, would be atypical for an above-average fund. Absence of signals or information that would be inconsistent with an expected third-quartile performance
Failure happened	Events that, if no appropriate measures are quickly put in place, will result in a sub-standard performance or even in a failure or collapse of the private equity fund

The operational status grading methodology aims to identify events and to form a judgement on their severity. As they are implicit, a new operational status grade inconsistent with the current expected performance grade should lead to an expected performance grading review and, if necessary, to its adjustment. The operational status grades should also be based on a structured approach, e.g. on checklists. This offers the advantage that the events are systematically covered and allows standardisation of the process, leading to more consistent review and ensuring its completeness. The checklist definition requires identifying events related to the operational status of the private equity fund that could impact the final performance. A relatively comprehensive description of each event is required. In each case, it must be determined how an event can be identified, to what degree it can impact the expected performance and, last but not least, how it could be cured.

In essence, grades have two functions: one is to alert in cases where “red flag” events could have such an adverse impact that they need to be addressed right away, and the other is diagnosis, i.e. forming a judgement on the degree of the potential impact resulting in a priority setting for the monitoring corrective actions. Examples of elements to take into consideration for the operational status grading could be lack of, or the loss of, experience, leading to incomplete teams, indications of overly optimistic valuation policies or financial information coming too late. More severe would be “red-flag” events such as contractual breaches, litigations against the fund manager, resignation of key persons, indications for fraud, financial information being inconsistent, faulty or overly “creative”,<sup>13</sup> or deviations from the originally declared investment focus. Other adverse signals indicative of various degrees of problems could be defaulting investors, or co-investors threatening to withdraw or discussing replacement of the management team. For their diagnostic function, operational status grades are essentially based on the assessment of the same dimensions as the expected performance grades shown in Table 18.2.

Operational status grades are to be provided by the limited partner’s investment managers, based on their contacts with the fund managers. These contacts can be formal, such as investment meetings or quarterly reports, or informal, such as discussions with the fund manager or with co-investors, “heard in the market”, telephone calls, etc. Events related to

<sup>13</sup> See Kaneyuki (2003).



**Table 18.2** Dimensions to assess for operational status grades

Dimension	Examples for points to assess
Manager skills	<p>Is the team size appropriate in relation to the portfolio and targeted fund size, or is it too small?</p> <p>Did turnover lead to the fund manager having less experienced team members?</p> <p>Do team members clearly show that they lack experience and skills to implement the declared strategy?</p> <p>Does the fund manager pursue activities that are clearly out of the scope of their expertise?</p> <p>Is it a complementary team, is there dependence on one individual or is there no expertise at all?</p> <p>Assessment based on the team members' ability to explain strategy, reporting quality, ability to provide forecasts, etc</p>
Manager stability	<p>Were there changes in responsibility?</p> <p>Is the team balanced or are junior team members the "value adders"?</p> <p>Did team members resign? If yes, for personal reasons or after internal disputes?</p> <p>Assessment based on, for example, formal and informal contact with team members</p>
Manager motivation	<p>Mainly linked to the fund's incentive structure and expectations about the portfolio's financial returns</p> <p>Assessment based on likelihood to receive carried interest and to raise a follow-on fund</p> <p>Depending on whether carried interest is doubtful for the team members, whether under-performance is expected but raising a new fund is possible, or whether in the extreme neither carry nor new funds are likely, the effect on motivation and also on the team stability can be significant</p>
Fund strategy	<p>Is there a significant style drift out of area of expertise?</p> <p>Is investment activity in line with declared strategy, is it a more opportunistic behaviour, or is it even a complete reversal?</p> <p>Are there potential conflicts of interest with previous funds or successor funds?</p> <p>Limited partners should be vigilant when fund managers start discussing a "new strategy"</p>
Fund structure	<p>Is the team size appropriate in relation to the portfolio, or is it too large?</p> <p>Are investors getting what they pay for, or do fund managers not work for the portfolio or add no value?</p> <p>Assessment based on, for example, analysis of the fund's budget or contact with entrepreneurs from the portfolio companies</p>
External validation	<p>Which other private equity houses are working with the fund?</p> <p>Are other limited partners interested in investing in the follow-on fund?</p> <p>Assessment based on, for example, feedback for co-investors and market</p>
Portfolio financials	<p>Are there significant write-offs of key investments?</p> <p>Is the portfolio under- or over-diversified?</p> <p>Is the remaining liquidity sufficient?</p> <p>Assessment based on fund managers' projection for the portfolio, a comparison against targets, benchmarking against the peer group, etc</p>
Dimension fit	<p>This list cannot be exhaustive but needs be complemented by experience and judgement</p>



exercising pressure on the fund manager. One of the more obvious and common monitoring actions is the increased use of renegotiations of management fees and fund size towards the end of a fund's life.

Due to the illiquidity of private equity funds, the toolset for the management of the portfolio is comparatively restricted. An active trading of positions to rebalance the portfolio, to bring it in line with allocation targets, is not feasible. Active involvement mainly relates to individual funds and can take the following forms:

- The simplest activity of a limited partner is not to commit to the follow-on fund. In situations where a fund management team has clearly demonstrated that they are not up to the job or that they are not cooperating with their limited partners, this is a straightforward solution. This is also most feared by the fund managers, as often the loss of a reputable investor sends a clear negative signal to the market. Indeed, not only does the team need to go back to the capital market for fund-raising, but also they are now faced with a "handicap".
- Limited partners can, to some degree, use their negotiating power to reduce the new fund's size, or in the new agreement they can address the issues that created risks in the previous fund. Stronger funds, however, may resist such changes.
- During the lifetime of a fund, agreements are not "carved in stone". If it becomes clear that the original investment strategy cannot be successfully implemented and no credible alternative is brought forward, investors can influence the fund manager to reduce management fees or even release limited partners from portions of their commitments. More often than not, general partners give in to reducing fund size. This investor-friendly behaviour can build up goodwill and ease the next fund-raising exercise. Moreover, from a financial viewpoint it also makes sense, as it increases the likelihood that fund managers will receive carried interest.
- Of course, firms have all rights to refuse such voluntary actions. However, this often results in pressure, activism and even lawsuits from limited partners who want back some or all of their money. In the extreme, and if there is an agreement between the limited partners, the fund management team can be terminated "for good cause". Even without recourse to such extreme measures, the threat of action or the noise of complaints from investors can be highly damaging to the reputation of a fund manager. This in turn can have serious implications for future fund-raising ambitions.
- Investor default is questionable, as it constitutes a contractual breach, but it may be the instrument of last resort if the fund manager is clearly incompetent.<sup>15</sup>

It does not make sense to spend too much on monitoring funds that are already quite advanced in their life cycle or that are "beyond recovery" anyway. It is also not money well spent to focus scarce monitoring resources on teams that are highly professional or on funds where other experienced limited partners already exercise significant oversight. Likewise, in situations where teams are not susceptible to suggestions from their investors, going beyond the routine monitoring may not be meaningful. In any case, here one would not invest in the follow-on fund. The cost of control has to be reasonable relative to the size of the asset.

---

<sup>15</sup> See Meek (2002): "In one instance the limited partners of a US fund have simply refused to honour any future drawdowns, taking the view that to do so would simply be throwing good money after bad".

## Case Study: Saving Your Investments— Approaches to Restructuring\*

Several years ago, the board of administration of a European pension fund voted for the launch of a European private equity funds investment programme. The programme started with an initial allocation of €100 million that could be increased to €500 million, depending on its success. Harry Cover is heading the programme, with the support of Allan Haglund and, on an as-needed basis, Barbara Red, who is working for the risk management department.

Harry's secretary has brought to his desk the first programme annual activity report just finalised by Barbara. As his next meeting has just been postponed, he has plenty of time to read it. In doing so, he discovers on page 5 the list of investments made during the year. After having defined the programme's investment strategy, Harry has already realised a couple of investments that today are performing quite well—with one exception. In fact, while the past year has been quite a positive year for Harry, one of his investments has been disastrous. Without a quick reaction and a good restructuring it could significantly impair the performance of the programme.

Everything started at beginning of last year, when the investment committee approved an investment of £5 million in a UK-based fund, Greenlight 2. Its management company, Searchlight, is one of the leading private equity managers in the UK. At the time Harry decided to invest, its first fund, Greenlight buyout, which was launched 10 years ago, and second fund, Greenlight 1, which was launched 5 years ago, were real success stories, having generated impressive realised and unrealised profits. The firm employs about 30 experienced investment professionals located in Oxford. This long-established player's strategy rests on two columns:

- The sponsor, a British bank specialising in private equity, will provide the deal flow, do the due diligence reference and the general support via its network. Searchlight is a wholly owned subsidiary of the sponsor.
- Puzzle Ventures, a US technology venture capital firm, will provide infrastructure as well as co-investment opportunities in the USA for Searchlight.

At the end of last year, Searchlight was managing three funds with different investment focuses:

- Greenlight 1 and Greenlight 2 (launched some months ago) had a focus concentrating on high tech, with crossing discipline companies in western Europe.
- Greenlight buyout fund, which was targeting to the UK market.

---

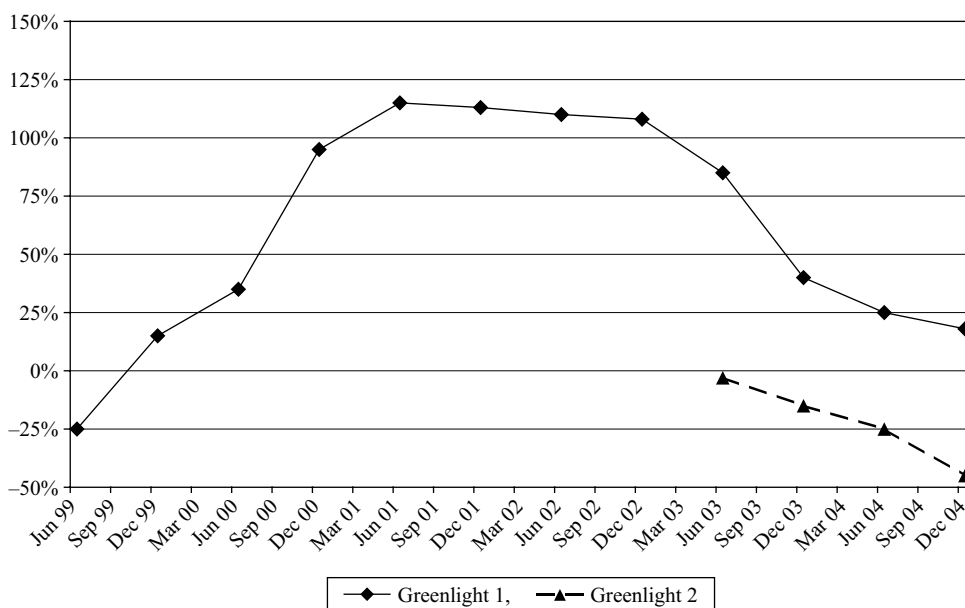
\* Gauthier Monjanel prepared this case study in collaboration with, and under the supervision of, Pierre-Yves Mathonet and Thomas Meyer. While this chapter describes a real-life case, characters, organizations and specific investment details are fictitious.

At the time of the approval, Allan Haglund, Senior Analyst in the pension fund, could show, in the investment proposal report (see Appendix 19A), very exciting figures to his investment committee. Greenlight 1, launched 4 years ago, had a net IRR of 85% with two exited portfolio companies via IPOs. The track record was—albeit mainly unrealised—quite impressive for this relatively young venture capital team, and the target size of the new fund was easily reached. In fact, the final fund size was almost twice the initial target size, as disclosed in the private placement memorandum, and five times greater than the first fund. Some big and respected institutional investors were presented in the first closing. One month after the pension fund’s approval, Greenlight 2 held its second and final closing.

## 19.1 THE VALLEY OF TEARS

A few months after committing to the fund, Allan started to have some doubts about the quality of the team and especially about the validity of its track record (see Appendix 19B and Figure 19.1). During last year the gross interim IRR of the first fund started to decrease slowly, quarter after quarter. At the end of the year, it has been reduced to a quarter of its highest value. The fall was notably coming from the collapsed stock price of the two quoted investments just a few months before the end of the lock-up period.

For Greenlight 2, which was in its investment period, the fund managers did not take these difficult market conditions into consideration and invested aggressively. Fifty percent of the commitment was drawn in less than 2 years in 18 companies focusing on the same sector as the first fund. Indeed, Greenlight 2 was continuing the “successful” strategy of Greenlight 1, i.e. acquiring converging technology companies (information, communications and web-enabling companies technologies). After 2 years of operations, the fund situation was disastrous, as summarised in Table 19.1.



**Figure 19.1** Interim IRR evolution of Greenlight 1 and 2

**Table 19.1** Situation of Greenlight 2

Total fund size	£140 million
Amount disbursed	£70 million
Repayment	£0
Number of investments since inception	18
Exits realised	0
Investments written off	11
Investments written down	5
Investments at cost	2
Cost of investments	£62.4 million
Remaining value (in accordance with BVCA guidelines)	£9.9 million
Value/cost	15.9%

Looking at the worsening situation, Harry calls Allan to discuss this “watch list” case. *“Allan, we just received the quarterly report of Greenlight 2 for the third quarter, and I think we have to react very quickly. Each quarter since our investment, the fund has given us bad news. We have most probably overestimated the quality of the team and its strategy. I would like to present to the board in two weeks a restructuring action plan with different alternatives to limit our losses”.* “Fine with me”, said Allan, *“but to perform this analysis, we should request Barbara’s help”.*

Barbara has already worked with Harry on the investment strategy. Furthermore, in her previous position, she has already faced some difficult restructuring cases and her experience will be helpful.

## 19.2 THE REPORT TO THE BOARD

After having gathered all the information available on the deal, Allan and Barbara first flick through the limited partnership agreement to make an “inventory of the important clauses and of the possible fixtures” (see Table 19.2). Their first conclusion is that, most likely, they will not be able to act alone. Indeed, the pension fund is not a major shareholder and owns only 3.6% of Greenlight 2 (£5 million out of £140 million), which is far from the

**Table 19.2** Clauses for the restructuring

### Key person event

Suspension of the fund upon reduction of dedication of a minimum of team members to the fund: no investment, divestment or drawdown subject to existing commitments, replacement with consent of 50% of investors (commitment), deadlock after replacement delay leads to good leaver or dissolution.

### Leaver provisions

Vesting profile for good leavers: leaving key men/dismissed management shares carry 60–40% for investment period—divestment. No compensation, loss of carried interest for bad leavers (bankruptcy, gross negligence, etc., judgement of investors). Good leaver scenario includes full carried interest vesting prior to year seven. However, bad leaver provisions are favourable for investors in the sense that they include, *inter alia*, any breach of the investment policy, the allocation or the distribution rules: in all these events a bad leaver dismissal (with loss of carried interest) would be possible.

50% required for control. Therefore, the other investors will have to be convinced before negotiating an acceptable solution.

Being a member of the supervisory board, Allan decides to call the other members, starting with Julio Utecht, who is representing one of the main investors in the fund. Allan quickly notices that this investor shares his views on the necessity to restructure entirely. After two other phone calls, the conclusion is clear. The supervisory board has lost all confidence in the fund manager's ability to make the fund a success. It is decided to organise an unofficial meeting in Paris to try a common funding solution. In the meantime Allan, with Barbara's help, draws up a list of possible solutions that will be discussed with the co-investors:

1. **Strategy refocus:** the investment strategy of the fund has completely changed and the team is now focused on later-stage investments that have already broken even.
2. **Termination:** investments are stopped and the fund is liquidated.
3. **Removal:** the management team is fired and the strategy remains the same and is applied by another management company.
4. **"Dr Freeze":** the fund is frozen and the remaining investments are properly managed, exited as soon as possible, with a minimum amount kept for follow-on investments.

Allan submits a preliminary report to Harry, who decides to send it directly by e-mail to the different co-investors.

Two days later, in the famous Hotel of the Place Vendôme in Paris, Allan and the other investors are now sitting around a table to discuss the list of possible approaches. The first solution, a change in strategy, is quickly rejected, as some of the co-investors in Greenlight 1 are also co-investors in Greenlight Buyout Fund. The targeted investments (profitable medium-size companies) are the main focus of the later-stage fund and the two funds will then enter into competition. Moreover, the team, who are not managing the buyout fund, have no experience with later-stage investments, and finally, the remaining commitments are not really sufficient to cope with the cash requirement of such a strategy.

The second solution discussed and welcomed by the smaller co-investors is to liquidate the fund immediately. This has the advantage of cutting possible further losses but, on the other hand, as early-stage companies' liquidation value is often nil, the entire amount disbursed as of today will most likely be totally lost and will not be compensated for by the possible exits of the portfolio's stars. Even though most of the shareholders recognise that the team have not been able to anticipate the downturn in the targeted sector, they believe that this team is the most appropriate to extract the maximum value out of the portfolio. This view is further reinforced by the dismissal of the partners blamed for most of the disastrous investments. This departure was following the common pressure of the team and the investor.

As already mentioned, because the team ability to manage the portfolio has not been clearly put into question, and because it will be a long process to find another team to manage seven distressed investments, the third solution is also rejected by the investors.

Finally, the fourth solution appears to be the best compromise for all the co-investors. On the one hand, it limits the possible losses by reducing the fund size, while, on the other hand, it allows the existing team, who is the best placed to extract some value from the existing portfolio companies, to be maintained.

Following the meeting, Allan prepares a table, shown here as, Table 19.3, for Harry that summarises the pros and cons of the different solutions discussed. After 8 hours of lengthy discussion, the co-investors finally agree on a suitable solution that will have to be discussed with the fund managers.

**Table 19.3** Greenlight 2 restructuring—Summary of the various solutions

Pros	Cons
<b>1. Strategy refocus</b> A later-stage focus would offer better investment opportunities and therefore have a higher expected performance	The strategy refocus will enter in conflict with the existing buyout fund The team has no experience in this stage focus The uncalled commitments are not sufficient to support this strategy
<b>2. Termination</b> A termination would limit losses to the drawn commitment	The remaining value from the current investments would most probably be lost This solution would strongly penalise the team who still has to divest Greenlight 1's portfolio companies. Therefore the co-investors in Greenlight 1 & 2 could reject this alternative
<b>3. Removal</b> The co-investors put in place a new team, which is supposed to manage the uncalled commitment better	This solution is a long and costly process with no guarantee of success
<b>4. "Dr Freeze"</b> This solution would limit losses to the reduced fund size with an upside potential The motivation of the team is kept through the implementation of a new incentive structure	The management team remains in place without being penalized too much for its strategic/investment mistakes

### 19.3 THE TERMS OF THE RESTRUCTURING

One week after the meeting in Paris, the supervisory board meets the Searchlight team and presents its plan, which is intensely negotiated. But the threat of a possible closure of the fund will give a lot of power to the board. This will be reflected in the proposal that is largely in favour of the limited partners.

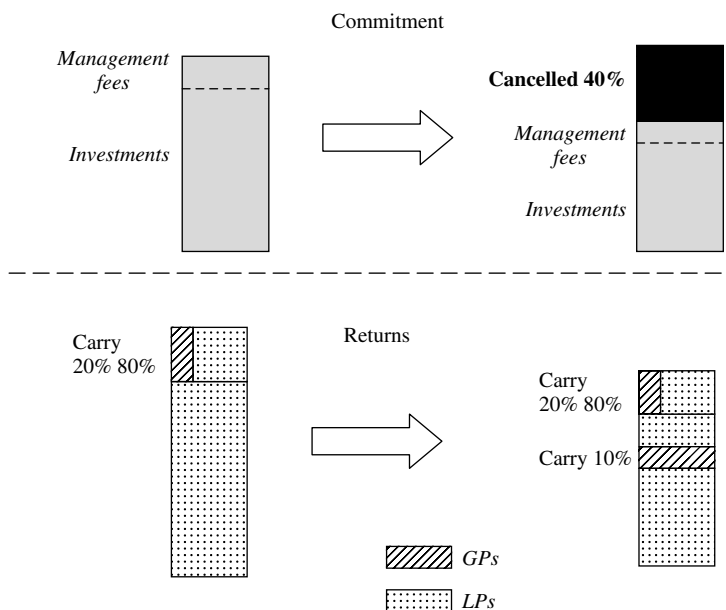
The following day Allan receives the proposal, which will be discussed and certainly accepted during the next general meeting of Greenlight 2. He just has to summarise the different points in his note to his board to receive a clearance before the final meeting with Searchlight. The final outcome can be summarised as follows:

1. The first objective is to freeze the fund and to stop further investment. An *early termination of the investment period*, 3 years before the originally foreseen date, is then agreed.
2. The second objective is to limit the potential losses for the co-investors and to try to extract the highest value from the current portfolio by *keeping a reserve* for future disbursements with a maximum of £7 million (5% of total commitments). This money will be used for follow-on investments. Five value-drivers have been identified and for each of them the team and the board have evaluated the amount of money needed up to a potential exit. The fund size will be reduced from £140 million to £84 million. Each investor will equally *decrease his/her commitment* by 40%.



3. The third objective—already implied by the second—is to restrict the future expenses by **cutting the team** size from 12 to six people, and to reduce it further in line with the liquidation of the portfolio. Meanwhile, the **future amount of the management fee will be reduced** and the unused funds will be reimbursed to the co-investors. Then the management team's salary packages will be frozen.
4. Finally, as for all private equity transactions, success can only be achieved when the interests are aligned. It is also decided to recreate an incentive mechanism for the team to keep them motivated, and to **require the remaining team to co-invest** along with the fund at a rate of 10% of their salary package, in order to strengthen their commitment *vis-à-vis* the co-investors. A **new cash-flow cascade** and a new carried interest scheme for the management company have been put in place. First, 100% of repayments are allocated to the investors until they have received 75% of their aggregate payment. Then the management company will receive 10% of all proceeds up to a maximum of £1 million. Thereafter, all the proceeds will be paid again to the limited partners until they receive 100% of their aggregate payment. Finally, further returns will be split, 80% to the investors and 20% to the general partner. (see Figure 19.2)

Harry presents the proposal to his board. As this is the first restructuring case and the board has no preliminary experience in private equity, numerous issues are discussed. According to the board, the solution discussed is acceptable; however, the board members criticize the revised incentive scheme. Some of them do not understand the rationale for giving a revised carry that is even more favourable than in the original limited partnership agreement to a team that failed in the past. Harry stresses the fact that, without this new incentive structure, it is highly unlikely that the team will remain with the fund and will be able to turn this



**Figure 19.2** Greenlight 2 restructuring—cash flow cascade concept before and after the restructuring

crisis situation around. Finally, the board agrees with the proposal and one week later in London, 80% of the co-investors vote in favour of the proposed restructuring.

## 19.4 EPILOGUE

Two years later, the team is on track with the revised strategy. Out of the five investments that had been identified as future value drivers, four are now profitable and successive financing rounds have hugely increased their value. The fund has entered into discussion with an investment banker to list two of their investments. But the most positive outcome for the team is that they have regained the confidence of the limited partners. And guess what? Harry is currently working on a new investment proposal: Greenlight 3.

## APPENDIX 19A: INVESTMENT PROPOSAL

**Table 19.4** Greenlight 2—investment proposal

<i>Fund Manager</i>	Searchlight Management
<i>Location</i>	Oxford, UK
<i>Fund size</i>	Minimum: £85 million (first closing) Target: £140 million
<i>Proposed investment</i>	£5 million
<i>Fund focus</i>	The fund will continue the investment strategy of its predecessor fund, Greenlight 1 (investment in information, communications and web-enabling companies technologies)
<i>Legal structure</i>	The fund will be structured as a UK limited partnership
<i>Duration</i>	10 years + 1 + 1
<i>Investment period</i>	5 years
<i>Deal flow</i>	Greenlight has established a stable and partially proprietary deal flow of, on average, 800–900 investment opportunities per year. This deal flow is primarily generated by the sponsor of the fund
<i>Investors</i>	The fund held its first closing with the following investors: JP Sachs, £20 million FOF VC Partner, £20 million Venture Kapital Invest, £25 million Sponsor, £20 million
<i>Fund governance</i>	The GP shall establish a supervisory board, with significant investors, having the right to appoint a representative. It will meet at least four times a year and provide overall policy guidance and decide on certain issues pertaining to the Fund, such as conflicts of interest (representing 60% of the shareholders' voting base). This board will consist of: Jamie Sumlin, Chairman, representing a German pension fund Jessie Panza, Voting Member, representing the sponsor Jessie Guptill, Voting Member, representing a UK fund-of-funds Julio Utecht, Observatory Member, representing a US fund-of-funds

**Table 19.4** *(Continued)*

<i>Summary of terms</i>	
Incorporation cost	Up to 1% of total commitments
Management fee	During investment period: max. 2.5% p.a. on committed capital After investment period until the end of the Fund's life: max. 2.5% on invested capital
Fee offset	Full fee offset
Carried interest	20%
Hurdle	7%
Catch-up	Full catch-up
Claw-back	Not applicable, since the distribution cascade foresees full repayment of commitments
Key-man clause	Yes

## APPENDIX 19B: TRACK RECORD

### 19B.1 GREENLIGHT 1

**Table 19.5** Greenlight 1 portfolio development

	Country	Capital invested (€)	EVCA fair market value (€)	Realised proceeds (€)	Unrealised proceeds (€)	Multiple on investment	Gross IRR (%)
<i>Unrealised investments</i>							
<b>Wireless</b>	UK	17.6	25.6	0.0	25.6	1.5	24.0
<b>HING</b>	NL	12.4	18.7	0.0	18.7	1.5	12.1
<b>Kralwo*</b>	UK	20.3	69.5	5.0	64.5	3.4	195.0
<b>Gentri.com</b>	UK	20.0	27.8	8.2	19.6	1.4	21.8
<b>Computer +</b>	FR	17.5	25.0	12.0	13.0	2.8	35.0
<b>Web Tech</b>	GE	12.9	14.5	0.0	14.5	1.1	10.3
<b>Telecom Dev</b>	FR	12.4	12.4	0.0	12.4	1	0.0
<b>Cocis*</b>	BE	16.0	45.0	0.0	45.0	1	125.0
<b>Total</b>		<b>129.2</b>	<b>238.4</b>	<b>25.2</b>	<b>213.2</b>	<b>1.8</b>	<b>111.0</b>
<b>Net IRR</b>							<b>85.0</b>

\*Quoted.

**Table 19.6** Greenlight 1 track record

Greenlight 1 + 85.0%			
	Upper	Med	Lower
Benchmark	18.00%	4.20%	−12.50%

**19B.2 GREENLIGHT BUYOUT**

**Table 19.7** Greenlight buyout track record

Greenlight Buyout fund + 25.0%			
	Upper	Med	Lower
Benchmark	28.00%	12.10%	−8.30%



## Secondary Transactions\*

The genesis of secondary markets mostly<sup>1</sup> dates back to the famous “Black Monday” in October 1987, and to the world economic crisis of the early 1990s. These two events produced a large need for liquidity among many financial institutions, especially those with illiquid assets such as private equity, which in turn created a new market for secondary interests in private equity funds or companies. Even though the number of secondary investments remained very low until the mid-1990s, the foundation for a new component of the private equity industry had been laid (see Figure 20.1).

Until the recent past, the secondary market was viewed by many as a “market of last resort” for those desperate to liquidate private equity positions. It not only suffered from a limited track record but also largely lacked transparency and was characterised by an unhealthy predominance of buyers over sellers. Today, investing in secondary transactions has become an innovative investment strategy and an active portfolio management tool in its own right, and the market has grown substantially in size and maturity.

In this chapter, we first review who buys and who sells on the secondary market and their respective motivations. We then describe how market participants price or should price these transactions. Next, we review the specific transactional and legal issues, and finally, we explain how secondaries can affect the fund managers.

### 20.1 SELLERS AND THEIR MOTIVATIONS

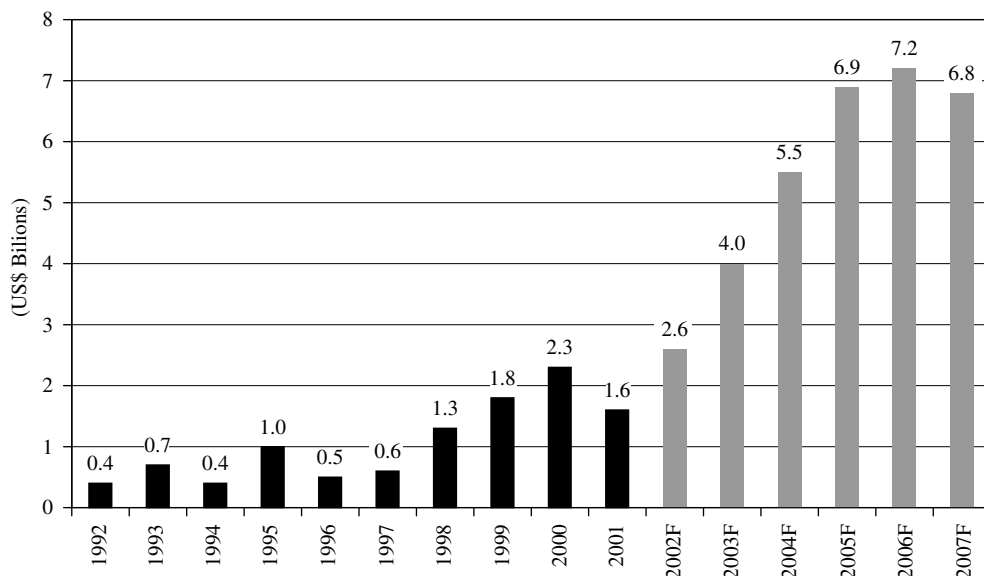
The success of private equity fund vehicles is partly due to restrictions on the transfer of shares, which reduce the time spent by managers on investor relations and allow them to focus on investment, management and exit activities. While there should not be, at least upon a fund’s inception, any incentive for a limited partner to sell, investors have sold and will continue to sell private equity holdings for a variety of reasons, including the following:

- *Liquidity needs.* An investor’s liquidity needs may change over the long-term life of a fund. After committing to a fund, an investor may find that he requires cash or that he is unable to make a particular capital call, and, as a result, may decide to liquidate a position.
- *Dissatisfaction.* Occasionally, a limited partner may lose confidence in a management team or become dissatisfied with the fund performance or strategy. A secondary transaction is, in this context, a way to redeploy the capital into new opportunities.
- *Return.* In some circumstances, e.g. when a fund is sold with a premium a higher IRR can be achieved by selling a position rather than holding it to maturity. Furthermore, once

---

\* We are grateful to Todd Konkell and Brenlen Jinkens of Cogent Partners for their valuable comment and suggestions. The views expressed in this chapter are ours and are not necessarily shared by them.

<sup>1</sup> Some pioneers, such as Venture Capital Fund of America or Habourvest, were already active buyers before 1987.



**Figure 20.1** Secondary market transaction volume

Source: Lexington Partners (historical data); Sao-Wei Lee (2003) (forecasts).

sold, the return achieved is frozen as becomes fully realised (funds most likely to be found in this category tend to have maturities of at least 6–7 years<sup>2</sup>).

- *Regulations.* Investors may need to sell in order to comply with national or supranational regulations. For example, under the new Basel II, banks are required to set aside a larger percentage of capital to protect against possible but unexpected private equity losses. This capital allocation requirement represents, for the banks, an increased opportunity cost. As a consequence, some banks have decided to divest certain or all of their private equity holdings.
- *Asset allocation.* With the decline in value of public equity holdings during market downturn, investors may find themselves exceeding their target private equity allocation and choose to divest some of their private equity holdings to rebalance their overall portfolios.
- *Financial results.* In order to reduce earnings volatility or, in case of a young portfolio<sup>3</sup> or venture capital market downturn, to increase earnings, an investor may decide to divest some of its private equity holdings.
- *Strategy.* Investors may wish to free up capital from certain non-strategic relationships and re-invest in funds that are more likely to bring them profitable business in return, such as co-investment rights (direct investors), M&A or IPO opportunities (investment banks).
- *Active portfolio management.* Following a change in the target allocation or an unexpected portfolio evolution, a limited partner may sell off an overexposure to a specific vintage year, geography, industry sector or a private equity sub-asset class. Furthermore,

<sup>2</sup> See Mooney (2003).

<sup>3</sup> Young funds' returns are on average negative, as the evolution of their performance normally follows the well-known J-curve.

when there is no more capital available, it may be the only way to free up resources to be able to commit to new market opportunities.

- *Administration.* The monitoring and the management of a sizeable private equity portfolio is highly time-consuming. Periodic reductions of the number of positions may permit the seller to focus on a smaller number of “core” relationships.
- *Change of group strategy.* Following poor market conditions, changes in corporate control, senior management shifts or other corporate-level events, a group may to reduce or eliminate exposure to private equity.

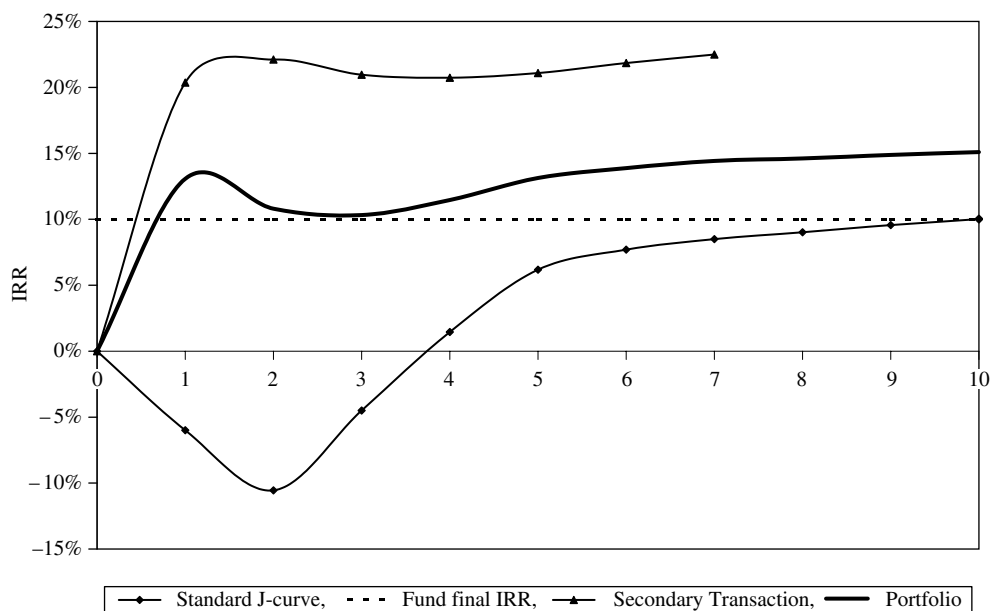
Given that investors sell their private equity holdings for a variety of reasons, the market has begun to shake off its association with distressed sellers seeking liquidity at nearly any price. Moreover, sellers are increasingly advised by specialised intermediaries, which help them in the structuring and the execution of the transaction and advise them on all aspects of the process.

## 20.2 BUYERS AND THEIR MOTIVATIONS

Secondary transactions are becoming more and more complex. They require detailed due diligence, including complicated valuations. Furthermore, compared to primary transactions, they require large amounts of cash in hand. For these reasons, they have traditionally been restricted to large, experienced secondary specialists and comparably experienced private equity institutions. Investors buy private equity interests on the secondary market for a variety of reasons, including the following:

- *Discount.* Secondary purchases are, in certain market conditions, made at a significant discount, allowing the buyer to earn higher rates of return than those achieved by a primary investor.
- *Repayment speed.* Compared to the fund’s original investors, a secondary buyer gets its investment back faster. Because he invests later in the life of the fund, he normally avoids the “lemons” that ripen first and benefits faster from the successes of the fund. Assuming that it takes approximately 7 years for a fund to reach the cash flow break-even point and 8–12 years to realise an attractive return, a secondary acquisition of a 4 year-old fund reduces the time to break even to 3 years and the time to realise an attractive return to 4–8 years or even less.
- *“Blind pools”.* Compared to an original investor, secondary buyers have better insights, as they can analyse the portfolio companies and the fund’s actual performance. This allows them to make investment decisions with significantly reduced uncertainty.
- *Portfolio diversification.* Proper portfolio management requires diversification across industries, investment strategies, fund managers, fund sizes, geographic location or vintage years. While primary buyers can only diversify with current or future vintage years, secondary buyers have access to past vintages and can, thereby, improve the overall risk profile of their portfolios.
- *“Invitation only” funds.* Successful fund managers often do not admit investors unless they have already invested in one of their predecessor funds. Completing a secondary purchase may be one way for a limited partner to be on the list of these “invitation only” funds and their successors.
- *J-curve.* Secondary transactions often have a reversed J-curve and can therefore be used to mitigate the primary fund portfolio’s J-curve (see Figure 20.2).



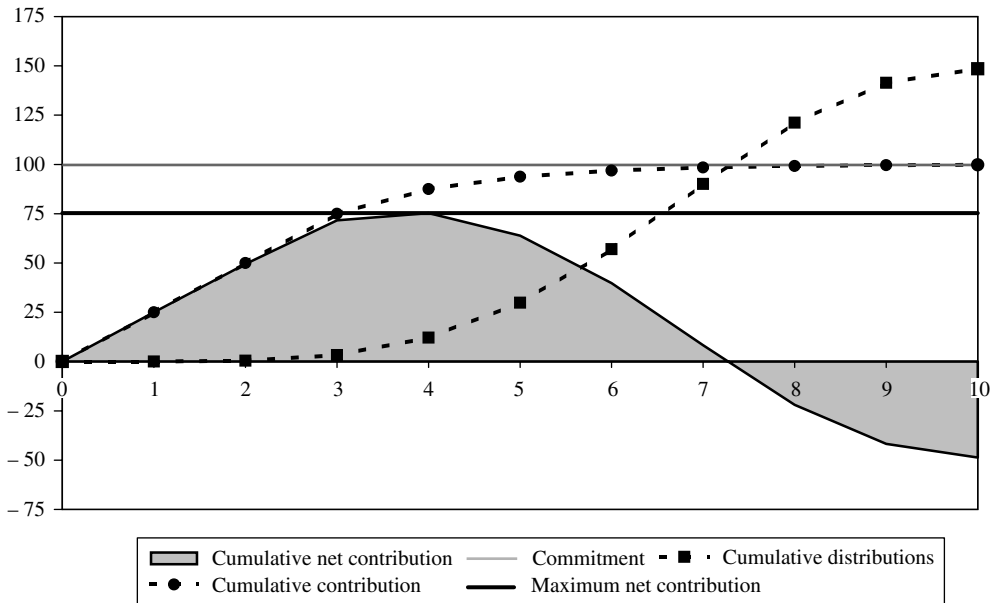


**Figure 20.2** J-curve (standard curve (fund with a 10% final IRR), secondary transaction curve (4 year-old fund with a 10% final IRR and with no discount) and portfolio curve (50% standard and 50% secondary)

- *Commitment pace.* Because there is generally a limited supply of investment opportunities in the primary market, it often takes several years for an institution to reach its target allocation. The secondary market can be used to speed the build-up of a private equity portfolio and, in a period of reduced primary offerings, to maintain a more constant exposure.
- *Investment pace.* In private equity funds, typical patterns of capital draw-downs and subsequent distributions imply that the net cash invested by limited partners is marginal at the beginning of a fund's life and that, as the fund matures, net invested capital will on average not exceed 70–80% of the committed capital (see Figure 20.3). This gap between the amount committed and the amount invested can be partially closed by leveraging the unique cash flows patterns of secondary transactions (large initial up-front payments, typically followed by faster repayments).

## 20.3 SECONDARY MARKET PRICES

There is some misconception in the market about what is being sold in a secondary transaction. This arises mainly from the way prices are expressed. Market participants usually speak in terms of “discount”. But it is often unclear to what the discount is applied. Sellers and buyers may think about discounts in different ways. Some believe the capital they have paid into the funds is the benchmark, while others may view the actual accounting value (or NAV) of the portfolio as the reference for considering the discount.



**Figure 20.3** Contribution and distribution pattern

Valuations of limited partnership shares have traditionally been done based on the fund's NAV, as discussed in Chapter 11. In order to be fair, such value needs to be equal to the present value of the fund's expected cash flows. Therefore, in reality, the asset being sold is not only the existing portfolio but also the future commitments to be assumed by the buyer. This explains why secondary purchasers may view the discount or premium as applying to the total commitment, rather than merely to the paid-in capital or the net asset value of the portfolio.

#### Box 20.1: Secondaries as benchmark for “verifiable fair value”?

When discussing the “reliable fair value” in the context of IAS 39, one of the first thoughts that come to mind is the idea of using secondary transactions as a reference for such an observable current market transaction. For the purposes of this discussion, we exclude the situation where a defaulting investor in the fund is forced to sell his positions but only consider an arm's-length transaction between a willing buyer and willing seller.

Currently, secondary transactions are “behind closed doors” and it is best practice not to communicate the price achieved to outside parties. If that remains the case, the pricing will be relevant only for the buyer—and, if some positions are retained, also for the seller—but leads to inconsistent valuations among the various limited partners. Of course one could now foresee in future contracts or through industry pressure that the price must be communicated to the other limited partners. But that could lead to them objecting to the secondary transaction because they want to avoid the write-down, in case positions are sold at a significant discount. That would further decrease the liquidity of these shares, and therefore there would be even less reference data available. Conversely, it could also lead to “creative techniques”. By “swapping” limited partnership shares—directly

or indirectly—at a premium, the value of the portfolio could be boosted for all of the fund’s limited partners. That would lead to a requirement to check, based on a list of clear criteria, whether a secondary transaction is done at a discount because the selling limited partner is in distress (investor default) or because the fund is impaired. Moreover, in the case of premiums, auditors need to verify the absence of “creative techniques”, which is highly difficult in an opaque market.

But let us assume that a regime is found under which a secondary transaction price could be used as a reference for valuations. That leads to the next practical question: what happens if the general partner is reporting a different valuation for the portfolio during the next quarter? As the secondary transaction of the limited partnership shares under ordinary circumstances should have no impact on the portfolio itself, the NAV reported should be in compliance with the new venture capital associations’ “fair value” regime (see AFIC, BVCA & EVCA, 2004). Which valuation is now the correct one? As the NAV is the latest “fair value”, can the share now be written up again? If yes, one might ask why it was written down in the first place? If no, will there be a kind of schedule where, over time, you can gradually lift the secondary price back to the general partner’s valuation? These questions are not as hypothetical as they appear—in fact, we encountered most of them when we executed our first secondary transactions. They demonstrate the inconsistencies associated with the absence of a valuation model for private equity funds. According to an industry specialist, so far there is no commonly accepted approach on how to account for secondary transactions. For the typical institutional fund-of-funds portfolio with its focus on primary investments, secondary buys and sells will be comparatively rare events, and in all practical terms they cannot be used to verify valuations.

To tackle these issues, we suggest the following approach. The fact that there has been a secondary sale does not imply that the price is the fair value, but you then need to “verify” that your original fund valuation still holds, which brings us back to the GEM valuation approach. In the absence of the secondary transaction as a reference point for “observable current market transaction”, the model needs to rely on other observable current market data, such as private equity benchmark figures.

Secondary transactions require a very resource-intensive process to estimate a realistic price range, without any guarantee that the seller will finally accept the offer. At the outset it has to be realised that the pricing of a limited partnership interest is derived from a negotiation process. Ultimately the price is a matter of negotiation, where a lot depends on the seller’s and buyer’s motivations.<sup>4</sup>

From a purely economic point of view, only the present value of the expected future cash flows is relevant. The valuations or NAV provided by a fund manager to its investors and a secondary market valuation assess the value of an investment from two different angles. In determining the NAV, a fund manager aims at giving an indication of the economic value of a portfolio at a certain moment in time, normally according to some industry valuation standard, whereas the secondary buyer is almost exclusively concerned with future cash

<sup>4</sup> See McCune (2001): “*The reasons why LPs sell interests affect the what, why and how interests get sold, and include: balancing portfolio of interests for risk exposure; fund focus or industry concentration; percentage interest in any one fund; obtaining liquidity; matching timing of capital calls and distributions; divesting to obtain regulatory consent; creating available investment capital to invest in current vintage funds; dissatisfaction with performance of existing managers or the identity of new managers. Only the last of these reasons relates to the GP or the performance of the fund. The rest relate to the LP’s internal motivations; usually this other agenda drives the sale, not the quality of the LP interest.*”

flows and the target rate of return.<sup>5</sup> Therefore, although the price ultimately agreed upon is often expressed as a discount (or premium) to NAV, such a discount is, for the buyer, simply a means of expressing its required IRR by using a common unit of measure with the seller.

To estimate the future cash flows, secondary buyers can follow two different approaches: top-down or bottom-up. A top-down approach models the future cash flows based on the fund's characteristics and on cash-flow statistics representative of a large number of funds. The bottom-up approach is based on a detailed modelling of the future cash flows at the portfolio company level, which are then aggregated and allocated according to the fund's specific distribution waterfall.

The bottom-up approach is the most relevant for transaction pricing. Secondary purchasers are mainly interested in situations where the bulk of the capital has been drawn, few or no exits have occurred, and the portfolio value can be negotiated downwards. In these cases, the analysis of the portfolio is critical. However, with significant undrawn commitments, there are too many assumptions, leading to less reliable results.

The top-down approach based on the GEM may often be less precise but works under all circumstances and, therefore, should always be used as a reality check. It also ensures consistency over several secondary transactions and allows analysis of the transaction in the context of the overall portfolio management. By using both approaches, it is possible to arrive at a range of reasonable prices, which can then be used as a basis for negotiation. Furthermore, in situations where there is significant undrawn capital, top-down analysis can be an easier way to evaluate future investments.

When possible, these approaches are also complemented by a comparison with similar transactions, i.e. previous sales of interests in the same fund or in funds with similar risk profiles.

### 20.3.1 Factors for valuation

The major factors that typically influence the pricing of a secondary transaction are:

- *Portfolio quality.* In a secondary transaction, the buyer ends up owning a stake of the existing portfolio. The quality of the portfolio companies is, therefore, an essential factor to the pricing of a secondary transaction.
- *Fund manager quality.* Assuming that you have to travel to the moon, with whom would you feel most comfortable: an astronaut or a New York taxi driver? Even though a newcomer may perceive New York as another planet, most people will not wish to travel with the taxi driver. Similarly, in a journey that will lead to the full exit of their invested or yet-to-be-invested capital, investors will feel more comfortable—and therefore pay a higher price—with an experienced manager.
- *Motivation.* The room for negotiation depends strongly on the respective seller's and buyer's bargaining powers. For example, an illiquid seller will see its motivation to sell increase and its price sensitivity decrease with a decrease in the time to the next capital call.
- *Undrawn commitments.* For a fund in its early stages, with the vast majority of the commitments still to be paid, the buyer will negotiate a larger discount on the funded portion as compensation for having to take on the undrawn commitment. Some secondary purchasers view the discount as applying to the total commitment, rather than only to the

---

<sup>5</sup> McGrady (2002a).

amount paid-in to date. In fact, some sellers with little paid-in capital have been willing to pay the buyer to take on their obligation to further capital calls.<sup>6</sup>

- *Fund maturity.* The buyer will also consider where each fund is in its distribution cycle. For example, funds that have just returned or are about to return the total invested capital plus the hurdle will have a disproportionate percentage of near-term distributions going to the general partner as it “catches up” on its carry.
- *Fund stage and sector.* Discounts tend to be higher for early-stage tech funds than for buyout funds. This can be explained by the level of uncertainty, which often results in an additional discount (called the “fudge factor”). Indeed, the portfolio companies of technology-oriented funds are perceived to be riskier and more difficult to value, because most are not generating cash flow and may even require further rounds of funding. On the other hand, portfolio companies of buyout funds are in mature industries and mostly cash-flow-generating, and therefore are relatively easier to value.
- *Size of the transaction.* Big positions are usually auctioned off and attract a larger number of potential buyers, increasing the competition and decreasing the discount. Small transactions are less publicised and have fewer potential buyers, therefore the bargaining power of the seller is often reduced. Furthermore, secondary transactions are sensitive to the deal size, due to economies of scale. Smaller portfolios are priced at a proportionately higher discount than larger ones with the same number of investments.
- *General market sentiment.* Last, but not least, the general market sentiment will have a significant impact on the pricing of a transaction. This phenomenon can be very well illustrated by comparing the market prices of publicly traded private equity vehicles with their NAVs (see Figure 20.4).
- *Duration.* The duration of a primary investment is normally around 7–8 years. With a secondary transaction on a 4 year-old fund, the duration is, of course, much shorter. Therefore, assuming that the CAPM is applicable (for further discussion on this topic, see Chapter 17 on the discount rate), and assuming a normal yield curve (see Figure 20.5), the discount rate to be applied will, *ceteris paribus*, be significantly lower than for a primary transaction.

### 20.3.2 Top-down analysis

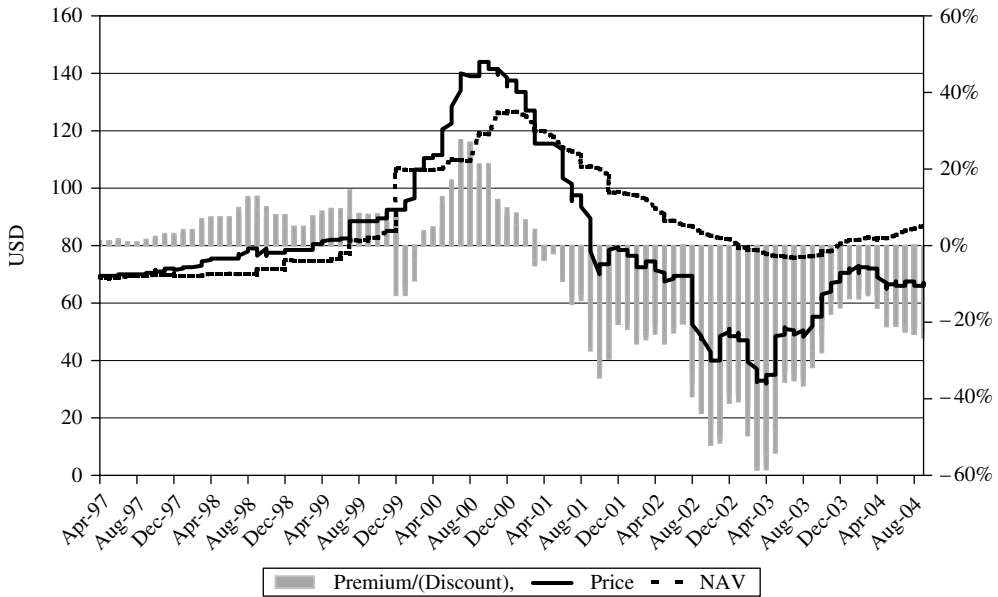
Many secondary purchasers have public and private databases with historic cash flows of a large number of funds. They generally model the presumed cash flows, using conservative assumptions based on these historic statistics and the funds’ characteristics. In Chapter 16, we describe how, based on our internal grading system, cash flow scenarios can be modelled in order to estimate the economic value of a fund.

Once the future cash flows have been modelled, the secondary price is estimated by discounting the expected future cash flows, based on the buyers’ expected performance:

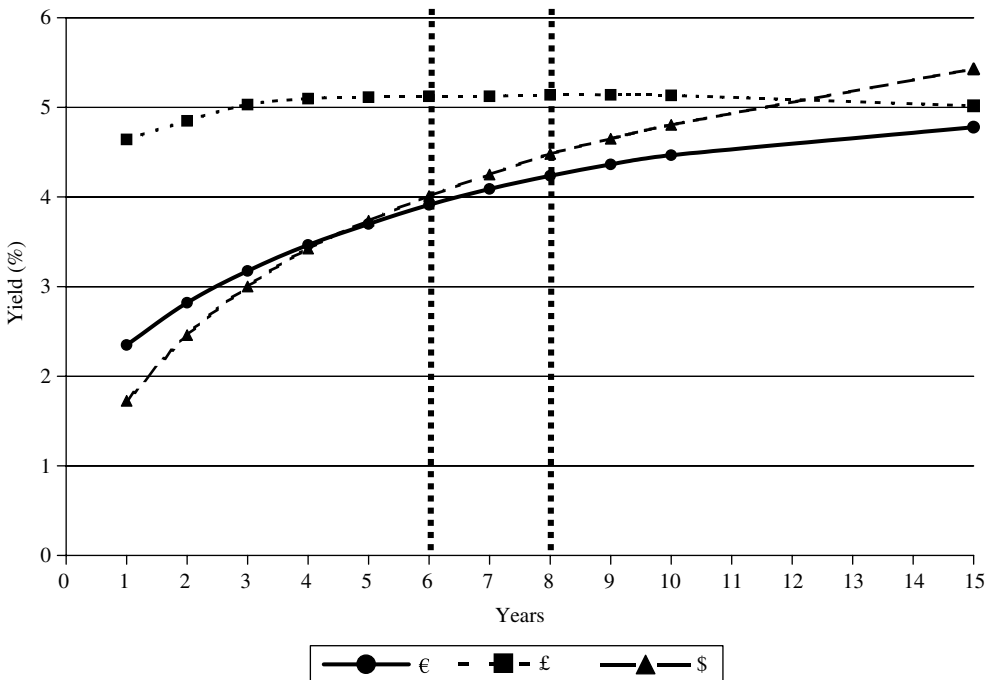
$$\text{Secondary price}_t = \sum_{i=1}^n \frac{CF_i}{(1 + IRR_{Buyer})^i}$$

where  $CF_i$  is the fund’s expected cash flow at the time  $i$ ,  $n$  is the fund’s maturity and  $IRR_{Buyer}$  is the buyer’s expected IRR.

<sup>6</sup> See Sao-Wei Lee (2003).



**Figure 20.4** Castle Private Equity—price and NAV in USD (from April 1997–September 2004)  
 Source: Castle Private Equity website.



**Figure 20.5** Government Zero-coupon yield curves  
 Source: Bloomberg, July 2004.

The discount applied by the buyer is then:

$$\text{Discount}_t = (\text{NAV}_t - \text{Secondary price}_t) / \text{NAV}_t$$

where  $\text{NAV}_t$  is the NAV of the fund at time  $t$ .

Ideally, this valuation should be complemented by a sensitivity analysis to stress-test the results under various likely scenarios, such as a more aggressive drawdown schedule or more conservative distributions.

### 20.3.3 Bottom-up analysis

Under the bottom-up approach, the valuation methodology applied by the buyer in the pricing of the transaction is essentially the same as that usually employed when making direct investments in privately held companies. The future cash flows to and from the limited partners are modelled by:

- Assessing the current business status and projecting the future cash flows and timing (follow-on investments, dilution and expected exit value) of each existing portfolio company. For buyouts, this can be relatively easy when the company can be valued based on multiples, such as price-to-earnings. For venture capital companies, valuations are usually more subjective.
- When the investment period is not over, projecting the future cash flows and timing (new and follow-on investments, dilution and expected exit value) for the future expected investments.
- Estimating various scenarios on the exit values (optimistic case: often the fund manager's forecasts; realistic case: the buyer's more conservative approach; and pessimistic case: a downside stress situation).
- Estimating the cash flows from the limited partners, i.e. the future drawdowns for the management fees, other expenses charged to the fund and new or follow-on investments, and verifying the consistency with the fund size.
- Applying the distribution waterfall to the cash flows generated from the exits to estimate the cash flows to the limited partners.
- Generating a cash flow distribution, normally by using a Monte Carlo simulation. For each run of the Monte Carlo simulation, a secondary price is calculated by discounting the limited partners' future cash flows by the required rate of return.

The secondary price is obtained by taking the average of all simulation runs, which, by comparison with NAV, results in a discount if it is lower than NAV or a premium otherwise.

The major component of the bottom-up analysis is the structured valuation review of each portfolio company. The buyer performs a line-by-line valuation review of the portfolio (or at least for the most important investments). This approach is not just adjusting for staleness in valuations, but rather is a required step to improve the buyer's bargaining position. Moreover, a secondary buyer will not be willing to pay for investment "mistakes" made in the past. Inflated entry prices, insufficient reserve policy and lack of downside protection or exit mechanisms are part of those mistakes and should be borne by the seller.

The structured valuation review needs to cover:

- Adjustment for staleness in the fund manager valuations and for recent valuation movements.
- Segmentation of the portfolio and, if necessary, application of discount factors to specific companies.

### 20.3.3.1 Adjustment for staleness

Movements in the fund's portfolio since the last reporting date need to be considered. Typically, the seller will look at the principles used to derive the valuation in order to assess its reliability. For instance, if an investment is valued according to the price of a funding round that took place more than one year before, the reliability of such a valuation may be questioned and a discount or premium may be applied, depending upon whether comparable valuations are believed to have decreased or increased since that funding round.

### 20.3.3.2 Segmentation of portfolio

A detailed analysis of the portfolio usually requires a tailor-made approach to cater to the fund's specifics. In broad terms, a portfolio can be segmented into various categories, such as:

- Quoted companies without lock-up constraints.
- Quoted companies with lock-up constraints.
- Unquoted companies without further financing needs.
- Unquoted companies with financing needs or in a distressed situation.
- Companies covered under guarantee schemes.

Each of the portfolio companies should be analysed in order to estimate, for example, the existing dilution protection clauses, the future funding requirements and related future dilution, the change of valuation since the last financing round, or the relative control of the fund manager over the company and the exit process. In accordance with the segmentation, each portfolio company's valuation is adjusted, and an overall discount factor for the fund is determined by adding up company valuations across the portfolio.

## 20.3.4 Comparables

In some specific situations, a secondary transaction on the same fund, or on a fund with a similar risk profile, may have taken place recently and, therefore, could be used as a basis to estimate the secondary price. Considering the very confidential nature of the secondary market, such an approach is very limited and probably only available to large secondary buyers or advisers. However, such information is important for assessing the current general market sentiment, which may have a significant impact on the pricing.

## 20.4 TRANSACTIONAL ISSUES

The lack of transaction volume is also partly explained by the important transactional issues of secondary acquisitions. The main issues are:

- *Due diligence.* Like primary investors, secondary buyers are investing in a management team and a strategy. In addition to that, they are also investing in an existing portfolio. This requires expanding the standard due diligence performed for primary transactions with a careful and detailed analysis and valuation of each portfolio company, similar to that performed by a direct investor.



- *Confidentiality.* As secondary transactions may give others the impression of investor dissatisfaction, some fund managers tend to view the sale of an interest in their fund as a negative event and may try to keep it confidential. Similarly, as secondary transactions may give others the impression that the seller is “desperate”, sellers often wish to keep the transaction confidential.
- *Structuring.* The complexity of secondary transactions has grown significantly. Increasingly complex transactions are being used to bridge the gap between sellers’ expectations and buyers’ requirements. This can be done through the introduction of different payment structures, seller participation in the upside of the portfolio, the creation of a new structure to hold the assets, or the insertion of a team to manage the assets.

In addition to transactional issues, there may be other legal, regulatory or tax issues to consider:

- *Agreement.* All transfers must comply with existing partnership agreements, which often require the consent of the general partner and, in some instances, the waiver or satisfaction of any right of first refusal held by other limited partners, and covenants concerning penalties or liabilities related to past contributions or distributions.
- *Legal constraints.* In the USA, the most important legal constraints are the Investment Company Act of 1940, the publicly traded partnership tax provisions, the Securities Act of 1933, and the Employee Retirement Income Security Act (ERISA). For example, the Securities Act requires that the buyer is an accredited investor and that no public advertising is used in soliciting potential purchasers.
- *Tax impact.* In the USA, to avoid having the partnership classified as a publicly traded partnership (and subject to taxation as a corporation), interests in the partnership cannot be considered to be readily tradable on a secondary market. Ordinarily, purchases of partnership interests by secondary funds will qualify for “safe havens” under the tax regulations, and thus will not cause the interest to be readily tradable on a secondary market.

## 20.5 THE FUND MANAGER PERSPECTIVE

The fund manager is also obviously involved in a secondary transaction. As previously stated, the consent of the general partner is required in some cases for a secondary transaction to take place. Even when such consent is not required, there is a range of other issues of concern to the fund manager:

- *Liquidity or no liquidity.* While greater liquidity is normally a positive attribute for any asset, this is not always the case for private equity funds. Although illiquidity may reduce the fund’s attractiveness to potential investors, on the other hand, it is notably this illiquidity that may explain the superior returns common to the asset class. Also, some fund managers may see some benefit to improving a fund’s liquidity, while others may see it as a threat to their established long-term relationships with “core” investors.
- *Type of investors.* Fund managers are not ambivalent about the type of investors and, for example, normally favour buyers who are financially strong and also potential investors in their next funds.
- *Confidentiality.* In general, it is important for a fund to maintain confidentiality, particularly with regard to the companies in the portfolio. However, a secondary transaction will only be possible if the potential buyers get access to this confidential information.

- *Signalling.* A risk for the fund manager with a secondary transaction is that it could cast doubt about its quality as manager. As in the private equity industry, the long-term “manager–investor” relationship is of utmost importance. Such an event, if wrongly managed, can have a serious impact on the future of the fund manager.
- *Governance.* When a large or controlling interest comes to market, a transfer can have a significant impact on the voting dynamics of the investors as a group and on the fund’s governance. This is especially true when the new buyer’s preferences and priorities are in conflict with those of the fund manager or existing investors.
- *Legal and tax.* The legal and tax status of the transferor and the transferee can have accounting and tax implications which affect the fund manager.

#### **Box 20.2: Securitisation: an alternative exit route**

Theoretically, secondaries allow for a detailed management of a portfolio, such as reducing or increasing exposure to various vintage years, geographical regions or venture capital vs. buyouts. When secondary discounts are too high, reducing exposure via securitisation is an alternative to low value asset sales. Additionally, in doing securitisation, further liquidity can be injected into investments. This financial technology can be an important portfolio management and regulatory tool. However, its detailed discussion goes beyond the scope of this book. Interested readers are referred to Tierney & Folkerts-Landau (2001), Erturk, Cheung & Fong (2001), Moise *et al.* (2002), Cheung, Kapoor & Howley (2003) or Cheung *et al.* (2003). Simplistically, for securitisations a special purpose vehicle (SPV) is set up, which issues a series of both rated and unrated notes for cash. The main part of the proceeds is then used by the SPV to purchase a portfolio of private equity assets. The seller of the portfolio normally holds the junior notes, as they perform more like an equity investment and, because of the risk attached, are difficult to sell. According to Levine & Smith (2004), for financial institutions there are three main drivers for securitisation of private equity:

- To reduce exposure to private equity funds while retaining some upside.
- To obtain regulatory capital relief.
- To generate new money to be invested in new private equity investments.

Regarding portfolio design, securitisation is a different game. Here the benefits of skewness are given up for a high level of diversification, aiming at achieving a predictable portfolio average return for the senior tranches. Then, the high return to shareholder is achieved through the use of leverage and the spread between the portfolio return and the interest rate paid to the notes holders.

One example is Silver Leaf CFO 1 SCA (see Moise *et al.*, 2003; or Institutional Investor, 2002). Deutsche Bank offered a collateralised fund obligation, designed as an alternative to selling holdings in the secondary market, to remove private equity investments from the bank’s balance sheet. A qualified SPV owns the private equity and issues notes divided into different tranches. Investors have claims to proceeds from the liquidation of positions that are based on the terms of their tranche. In similarly structured deals, the offering firm typically holds onto about 40% interest in the underlying private equity holdings and with it the first loss risk, as the rating agencies want the issuer to have a vested interest in the rated vehicle.

This approach has two main advantages: the transfer to the SPV is at a price closer to the NAV, because it is less exposed to the supply and demand on the secondary markets. If the equity layer of the transaction is kept, some upside potential can be retained. The disadvantages are that securitisation structures are complex and can be inefficient as a way of getting access to funding. The required rating, in combination with an insurance wrap to protect the principal component, is expensive. These transactions require a larger pool—around 50 funds—of diversified assets, and issuers have to keep a proportionally large equity stake of the overall transaction volume. As with secondary transactions, general partners of funds may be reluctant to consent to transfer of limited partnership interests to SPVs, as this may result in regulatory complications. Moreover, by agreeing in advance to future transfers, the private equity fund risks being treated as a publicly traded partnership that will be subject to tax on its income and gains at the entity level in the same manner as a corporation.

So far, structured products have often been disappointing for investors, in terms of either liquidity or performance, which is often due to over-diversification in combination with a high cost for the structure. According to Christophe de Dardel of Unigestion (SECA-News, 2003), over *“the years, we have however repeatedly observed that private equity does not lend itself well to structuring”*.

An example for an application of securitisation in venture capital is the New Economy Development Fund S.A. (‘TANEO’), backed by the Greek government. The purpose of the fund was to jump-start the Greek venture capital industry, which previously had very few active local players. With this structure €150 million were raised for a venture capital fund-of-funds. The Greek government held €45 million of preference shares and guarantee capital and interest on the €105 million of loan notes listed on the Irish Stock Exchange. The fund differed from other state-sponsored funds in that it had no soft money and was fully transparent.

## **Part V**

# **Embracing Uncertainty**



## Deviating from Top Funds

Are there reasons why one would consider investing in less than expected top-quartile funds? Apart from situations where top funds are inaccessible or better opportunities are unknown, the obvious reasons are investing for strategic reasons, e.g. to get access to their deal flow for co-investments or investing in funds for policy reasons which we will discuss in this chapter, or investing in funds with an important real option value, which we will discuss in the next chapter. Also, investing in “lower quality” funds through secondary transactions can be meaningful. As we discussed in the previous chapter, even a sub-standard fund can become a profitable investment if acquired at a discount.

### 21.1 STRATEGIC INVESTMENTS

So far we have implicitly restricted our discussion to the “plain vanilla” private equity fund managed by independent management teams. Such funds pursue investments for returns as their primary goal, and the team’s main incentive is the carried interest. However, there are also financial institutions and industrial corporations motivated not only by financial goals but also, and sometimes mainly, by “strategic” objectives. They set up their captive private equity funds, act as fund sponsor or simply invest in funds to meet these non-financial objectives. Typically, experienced investors in private equity avoid captive funds, because there is an inherent conflict of interest. The agenda is unclear and often set by the parent company. Group-specific remuneration structures can lead to staff instability. Often decisions cannot be as quick as with independent teams, as the parent company is generally involved with several levels of authority. A bank may pressure its captive’s fund managers to invest in companies because it hopes to win other banking business from it later. In recent years many banks have been quitting the private equity industry, not only because of the potential impact of Basel II, but also because of the poor performance of such activities.

Nevertheless, it can be meaningful to invest in such captive funds and they occasionally even find institutional third-party investors. One rationale is to increase diversification. The investment behaviour of industrial companies can be different from the usual fluctuations of the activities of independent venture capitalists. It also differs in situations where, during extended periods of dried-up funding in the markets, captive funds can find it easier to get access to additional capital within the parent group.

Another limited partner motive is to get access to co-investment opportunities through the network of the industrial group. Corporate venture programmes in particular can provide important intelligence on future markets and industry experience. Finally, many “captives” are ready to gain independence from their parents, especially when partners in a captive firm do not have as much autonomy, control or remuneration as they would like. As access to top funds is critical, this gives limited partners access to new teams with industry expertise that can become the “stars” of tomorrow.

**Box 21.1: Cornerstoning**

“Cornerstoning” consists in taking a large stake in a fund. In exchange for its higher contribution, the cornerstone investor has more bargaining power, can enjoy more friendly contractual terms and can influence the management of the fund. Cornerstone investments are of relevance in difficult fund-raising times or, more generally, among investors in first-time funds. For other limited partners the decision of a reliable institution to cornerstone a fund has a positive signalling effect. It increases the likelihood of raising the remaining capital in the second or subsequent closings, as investors do not risk wasting time and resources in the due diligence of a fund that in the end will not materialise. See Sachar & Jinnah (2001): *“We also concluded that the most successful spinoffs and other new funds had financial help from cornerstone investors or else had marketing help from advisors”*.

Often cornerstone investors assume an active role in the management of the company and deliver more than just capital, e.g. through deal flow or through back-office services.<sup>a</sup> There is, of course, the danger of diluting the responsibilities. It is the general partner, and not the cornerstone investor, who has to manage the fund. Coming from another angle, the motive for cornerstoning could be getting exclusive rights to a fund’s deal flow in the framework of a co-investment strategy or in order to learn more about a specific industry sector.

If the cornerstone investor succeeded to negotiate overly favourable conditions, the alignment of interests between the general partner and the other limited partners could be lost and potential investors could be put off. If the stake of a single cornerstone is too high, the fund will be highly subject to the capacity of this investor to respect its commitments. Other limited partners perceive an excessive influence of the cornerstone investor on the fund manager as a negative aspect.

An alternative cornerstoning approach is to take a stake of the management company itself, although such opportunities are relatively rare. Fund managers are willing to give a stake of their own companies only to the most loyal investors. On the other hand the advantages for the limited partner are to participate in the fees and the carried interest, and especially to reach a better alignment of interest with the fund manager.

<sup>a</sup> Marc der Kinderen, in an interview with AltAssets, January 2003b: *“Cornerstones can help firms to get their investor reporting and communication right and can help with their administration, this can be of real value to spinout and new firms that did not have to do this before”*.

## 21.2 POLICY OBJECTIVES

According to BVCA, the economic impact of private equity in the UK is significant: 81% of entrepreneurs of private equity funds believe that their business would not have existed at all, or would have developed less rapidly, without private equity, and more than 75% felt that their private equity backers had made a major contribution other than the provision of money. EVCA conducted comparable studies; they found that an *“average of 46 additional jobs were created by each responding company following the venture capital investment”*.<sup>1</sup> No wonder

<sup>1</sup> See European Private Equity & Venture Capital Association (2002); other results of the study were: *“95% of the companies replying to the survey stated that, without venture capital investment, they could not have existed or would have developed more*

that venture capital is associated with growth and positive contribution to economic and social development. Therefore, policy makers are highly motivated to support this sector of the private equity industry.

*Most of the harm in the world is done by good people, and not by accident, lapse or omission  
The God of the Machine, Isabel Paterson*

Typically the instinct is to only promote venture capital—which is associated with job creation—but not buyouts, which are associated with job cuts and therefore enjoy a bad reputation with the electorate. The perception that venture capital is “good” because it builds companies and creates employment and that buyouts are “bad” and executed by “vulture investors” because they often result in job cuts, is more than naïve. The quote above is from Isabel Paterson, a writer on freedom and liberty from the 1940s. She goes on to argue that most of the good in the world has been done by greedy people, i.e. people out to better themselves—like venture capitalists.

First of all, venture capitalists have little interest in the social impact of their activities. *“A wide-ranging conversation this week with a technology venture capitalist served as a vivid reminder of the complex nature of venture capital investing. Although the excitement of transforming an entrepreneur’s vision into profitable reality encourages almost an air of philanthropy, and public and private sector alike will often champion the wider social benefits of venture-backed business, it should never be forgotten that venture capitalists invest to maximise their return. And those who invest for reasons other than maximising return are not venture capitalists”*.<sup>2</sup> To quote an industry insider, “venture capitalists are efficient killers”. Part of the business model is to pull the plug early enough and as soon as it becomes apparent that a portfolio company cannot achieve investment returns in the high double-digit range, consistent with venture capital investing. Even if companies with further financing would still be perfectly viable, under such circumstances funding will be discontinued, typically leading to the entire failure of the start-up.

Second, the negative perception of the buyout sector we mentioned above needs to be disputed. One example for a player in the “politically incorrect” buyout sector is Kohlberg Kravis Roberts & Co. (KKR), which became an icon of “vulture capitalism” in the 1980s. One of its most famous deals was the USD 25 billion leveraged buyout of RJR Nabisco in 1989, featured in the book *Barbarians at the Gate* by Burrough & Helyar (1990). The buyout sector, however, is highly important for improving the efficiency of the economy and also for generating exit opportunities for venture capitalists; its ameliorating effects had moved Harvard Business School Professor Malcolm Salter to refer to KKR as “*the repair shop of capitalism*”. Or, in the words of Baker & Smith (1998), in “*a more fundamental historical sense, KKR’s legacy is this: its management buyouts breathed new life into a moribund system of financial capitalism, which in turn stimulated a new era of sustained economic growth, vibrant securities market, and at this writing, a nearly full level of employment.*

---

slowly . . . Almost 60% said that the company would not exist today without the contribution of venture capital . . . Seed and start-up companies identified research and development as the area in which the largest post-investment increases in expenditure were made . . . Companies using venture capital investment to fund expansion stated that the large increases were in marketing . . . All companies invested heavily in training their employees”.

<sup>2</sup> Quoted from Private Equity Online (2004); the article explains further: “The techniques used to maximise that return will often be at the expense of other parties, in particular investee company management and co-investors. Any venture capitalist is going to plan their financing of a business in such a way that others’ weaknesses can be fully exploited. Hence if a company burns cash faster than forecast, the venture capitalists involved will demand draconian terms from the management to finance the next round. And if a VC that has been co-investing is known to have funding issues itself, then here is another opportunity to acquire more equity at a bargain price. A growing company’s A, B, C (and successive) financing rounds are episodes fraught with brinkmanship, opportunism and—let’s use a euphemism—hardnosed-ness. That’s why successful venture capitalists are not nice people”.



*Many macro- and microeconomic factors have contributed to these happy circumstances, to be sure. Yet the catalytic role of the management buyout cannot be denied”.*

Development programmes range from socially responsible investments to outright industrial politics. Assessing the impact of policy-driven initiatives is difficult, not only because positive effects only show over the long term—far longer than the typical policy maker’s time in office—but because it is highly judgemental and depends on a constituency’s value system. Therefore, it is a challenge to manage several of these mandates in parallel, as they respond to different social objectives and eligibility criteria. In the extreme, a full alignment between these mandates is not possible and there may even be conflicts of interest.

Moreover, there is clearly a trade-off between policy-induced objectives and financial returns.<sup>3</sup> Policy constraints lead to restricted eligibility and therefore give funds less freedom in screening investment proposals. Also, funding is driven by the political agenda and budgetary considerations rather than by market conditions and their resulting investment opportunities. In line with their mission, development programmes often target a higher number of beneficiaries than purely commercially-driven programmes; therefore such programmes tend to be over-diversified. The combination of being overly diversified and losing sight of the return objective is likely to lock the portfolio returns in a substandard return area.

In principle, development programmes targeting the private equity industry pursue two main strategies:

- Promoting technologies or small and medium-sized enterprises by attempting to close the equity gap directly, using established private equity funds as intermediaries. Typically, investments in funds are only done accompanied by a series of conditions dependent on the targeted economic sector, such as definition of companies eligible for financing, geographical restrictions like focus on underdeveloped regions, or R&D stage technologies. However, this is only possible as far as the fund managers also assess this sector as financially attractive. Consequently, policy makers cannot go against the market.
- Promoting the industry through sponsoring emerging teams to close the equity gap indirectly by creating a vibrant financial environment. This is only possible if as few conditions as possible are attached, so that teams become successful and find investors for follow-on funds. Development-oriented institutions are often more willing to support first-time funds, despite their higher “mortality” rate, than institutions that are answerable to their trustees, and therefore have an important catalytic effect on the industry.

There is a tendency of policy makers and donors to impose an ever-growing list of demands and eligibility criteria on investment programmes.<sup>4</sup> Such policies, e.g. to create jobs, to protect the environment, or to promote “strategic” technologies, are well intentioned, but in venture capital this approach of “loading” limited partnership agreements with socially desirable conditions is likely to fail, as it stimulates adverse selection.<sup>5</sup>

*The experience worldwide where government has tried to encourage venture capital has not been good.*

Collin Blaydon, Tuck Centre for Private Equity and Entrepreneurship (quoted in *The Economist*, 2004b)

<sup>3</sup> Furthermore, as Lerner, Schoar & Wong (2004) suggested, political appointees in investment boards frequently lack experience in the private equity industry or may drive a more development-oriented agenda at the expense of a fund’s financial payoff.

<sup>4</sup> See Mallet (2004) on multilateral financial institutions: “A group of us uses the term ‘Christmas tree’. You take a project and hang all these ornaments on it—gender, resettlement and so on”.

<sup>5</sup> According to *The Economist* (2004b), Germany launched over 600 government programmes between 1965 and 1995 to encourage venture activity, without obvious success.

Only fund managers desperately in need of financing will be willing to accept such conditions, but they often cannot adhere to constraints such as a regional focus if no investment opportunities materialise in the area targeted by policy makers. Trying to enforce compliance with a desired policy may be self-defeating, as it can lead to conflicts with the venture capital fund's other limited partners. There is even anecdotal evidence that highly reputable investors have avoided funds where policy-driven institutions were represented. It needs to be kept in mind that venture capital is simply one of the riskiest investment activities, where only a "hard-nosed" approach can prevail, and any deviation from best market practices is likely to severely depress returns. In private equity, not going for the top funds is a recipe for disaster, as the performance difference between the bottom and the top quartile is significant.<sup>6</sup> Additionally, teams that do not perform well are less likely to stay around for a longer time. Any policy impact intended would therefore only be for a short while.

Assuming that policy-driven investments in the private equity sector should be of a self-sustainable nature to reduce dependence on government budgets and to impose some degree of market discipline, policy makers face a challenge in balancing the conflicting goals of meeting investment return and development objectives. In fact, they are faced with dilemmas similar to those of endowment managers,<sup>7</sup> who pursue the goal of preserving purchasing power of assets to enhance institutional autonomy while providing substantial flows of resources to an operating budget.<sup>8</sup>

How can the trade-off between financial return and non-commercial development objectives be managed? The starting point is to clarify the priorities. Should the development impact be maximised with investment returns as a secondary consideration, or should investment returns be maximized within a framework of "ethical"<sup>9</sup> criteria? For accountability and to make the decision-making transparent, these two dimensions need to be assessed independently. Policy makers need to be made aware that their objectives may carry a price, while the manager cannot be allowed to "hide" behind the political agenda to camouflage sub-standard investment performance. An expected performance grading-based approach with an additional scale for non-commercial objectives can aid finding a suitable compromise between these conflicting objectives. Depending on the priorities, for one of the grading scales the "budget" is set, while the other dimension is to be maximised within these limits. Alternatively the core-satellite structure (see Chapter 8) can be used to manage the two objectives through a split pool of independently managed "styles". A "development" pool has to be not only fully compliant with eligibility criteria, but the development impact needs to be maximised, ignoring any investment return considerations. The pool is balanced through a "return pool": although compliant with eligibility criteria, its sole objective is to maximise investment returns.

<sup>6</sup> As a basis for comparison: for top- and bottom-quartile bond managers the spread is in the range of 20 basis points, while in private equity it is approximately 2000 basis points.

<sup>7</sup> See Tobin (1974): "*The trustees of an endowed institution are the guardians of the future against the claims of the present . . . Consuming endowment income so defined means in principle that the existing endowment can continue to support the same set of activities that it is now supporting. This rule says that the current consumption should not benefit from the prospects of future gifts to endowment. Sustained consumption rises to encompass and enlarge the scope of activities when, but not before, capital gifts enlarge the endowment*" (quoted in Swensen, 2000).

<sup>8</sup> It is likely that the private equity fund portfolio's average returns will even be below returns of a treasury portfolio; for institutions that are given development-oriented mandates with the constraint to preserve capital, this reduces the incentive to invest quickly.

<sup>9</sup> For example, no investments in defence-oriented technologies.



## Real Options

If you have read Michael Crichton’s *Jurassic Park* and *The Lost World* (or if you have seen the movies) you will certainly remember the velociraptors<sup>1</sup> with razor-sharp claws that run around ripping apart everything in sight. What can this story on ferocious but extinct animals tell us about how to manage a portfolio of VC funds?

*We imagine the edge of chaos as a place where there is enough innovation to keep a system vibrant, and enough stability to keep it collapsing into anarchy. It is a zone of conflict and upheaval, where the old and the new are constantly at war. Finding the balance point must be a delicate matter—if a living system drifts too close, it risks falling into incoherence and dissolution; but if the system moves too far away from the edge, it becomes rigid, frozen, totalitarian. Both conditions lead to extinction. Too much change is as destructive as too little.*

Michael Crichton, *The Lost World*

We tend to see competition as the struggle between “heavyweights” like velociraptors and tyrannosaurs. However, in all ecosystems occasional mutations are necessary to give an advantage in the face of environmental changes. Sometimes even top performers under specific market conditions struggle if there is a change of the overall environment. Sixty-five million of years ago, at the end of the Cretaceous period, *Tyrannosaurus rex*, with his awesome long-term track record, would clearly have deserved a “top grading”. With hindsight, the mouse’s ancestors survived and have proved to be a better bid<sup>2</sup>.

The private equity fund industry resembles *Jurassic Park*, with a few rodents. It is continuously evolving and, therefore, requires continuous adaptation. The herding of mainstream seeking investors creates opportunities for those who try to differentiate themselves. The expected reward for deviating from the mainstream teams depends on the importance of the environmental changes. No experimentation within an investment strategy is as risky as too much mutation. One could argue that with mutations nature has found a mechanism for creating real options, so the concepts are somehow related.

### 22.1 REAL OPTIONS IN PRIVATE EQUITY

The grading technique we discussed in the previous chapters aims to capture the “measurable uncertainty”, i.e. the risk. The assessment of risk is mainly based on historical evidence and the currently prevailing market conditions. In this context, our decision and valuation framework was best modelled by a discounted cash flows model. But, as investors can be certain that the market will evolve, such an approach fails to capture all the value embedded in

<sup>1</sup> According to various sources on dinosaurs the meaning of this name is “speedy thief” (investors that got burned during the excesses in the late 90s might be tempted to draw parallels to the VC industry).

<sup>2</sup> Examples of market leaders who have not seen the changes and the mice in their market are numerous. For example, IBM saw the PC operating system as an uninteresting niche compared to the “T-Rex” hardware market. Sadly for IBM, there was a little mouse called Bill Gates who created Microsoft.

an investment proposal. Theoretically, two investors should arrive at the same risk assessment for a VC fund. Many factors unknown to a limited partner are in fact knowable, but their research comes at a cost associated with the due diligence of a fund proposal and the industry research. After the best possible analysis in the course of the due diligence, the decision maker is exposed to the “residual uncertainty”, i.e. the unresearched knowable and the unknowable. As effort spent on due diligence varies, investors are faced with different levels of residual uncertainty. While one would expect that, based on historical evidence, all investors would arrive at more or less the same conclusion, the residual uncertainty is likely to be interpreted differently, as its evaluation requires a significant degree of judgement. Consequently, experienced and professional investors can come to a different assessment of the same fund proposal.

The management under uncertainty is the major challenge for investors. At the same time, it is also one of the main attractions of this investment class that innovation and occasional technological breakthroughs—such as the personal computer or the Internet—have the potential to radically change the industrial or the consumer landscape. As no statistics exist about these not-yet-developed future components of the market, investors have to research, extrapolate and work with analogies to take decisions.

In an uncertain environment, a right—but not the obligation—to take an action at some point in the future has some value. Indeed, with time, as more information about the likely results of the action is known, the decision to act or not, being better informed, will lead to more profitable outcomes. Everything else being equal<sup>3</sup>, the more valuable these rights, the more interesting will be the investment proposal. Due to the nature of the private equity market, these rights are numerous and exist for both the limited partners and the fund managers:<sup>4</sup>

- Some clauses of the limited partnership agreements are designed as real options, e.g. the option given to limited partners to co-invest alongside the fund.
- Fund governance and the importance of the fund manager maintaining a good relationship with its investors, result in the existence of other “collective”<sup>5</sup> options, such as the rights to replace the fund manager, to restructure a fund, to reduce the fund size and the management fees, or to modify the investment strategy.
- One particularly interesting form of flexibility is the “implicit” right to invest in follow-on funds. We call it implicit, as there is no formal option but rather a right created by the importance of the “manager–investors” relationships. Based on their research, Kaplan & Schoar (2004) conclude that the best VC funds apparently restrict their size even if they could raise far more commitments; well-regarded VC firms have long waiting lists of prospective investors, as they tend to limit the growth of their funds.
- As discussed previously, limited partnership agreements cannot be “water-tight”, and neither should they be. By not being overly rigid, they allow some degree of influence through the investor’s monitoring activities.

<sup>3</sup> By this, we mean two investment proposals with the same DCF results.

<sup>4</sup> Also, fund managers can benefit from a series of options. As direct investment is not the subject of this book, we will not expand on it and just mention the most obvious ones:

- *Deal structuring*: often general partners use option mechanisms to align their interests with those of the entrepreneurs.
- *Staged approaches*: venture capital companies are normally financed in several stages, which give to the general partner the option at each stage to abandon.

<sup>5</sup> These options are collective, as, in most of the cases, the decision to exercise requires a simple or qualified majority of investors.

It is debatable whether limited partners have the “option to abandon” by defaulting on their commitments. Legal questions aside there are not only the associated “sunk costs” but also the negative effects on the investor’s reputation, putting future access to high quality funds in jeopardy.

Theoretically, investors could also exercise some influence on the general partner to delay the raising of a follow-on fund. But while in financial options a longer time during which an investment decision can be taken creates value, the logic does not extend to real options. As van Putten & MacMillan (2004) pointed out, the relationship between time and value is much less consistent for real options than in the case of financial options.

## 22.2 REAL OPTION ANALYSIS

The DCF method is the most common and probably the best-known approach for valuing investment opportunities. However, this method can be deficient in situations where investors have flexibility.

*If I were a CFO, I would use real options as a way of thinking but not as a financial tool because of the model’s complexity.*

Martha Amram

When an investor has an option to take an action at some point in the future, he can add value by acting to amplify good fortune or to mitigate loss. Real option models—such as Black–Scholes—apply the financial options theory to the valuation of these rights. To illustrate how it can be used, we can take as an example the implicit right to invest in a follow-on fund (see Appendix 22A for a “back-of-the-envelope” numerical example). This right has many of the same characteristics as a call option on a company’s stock. Both comprise the right, but not the obligation, to acquire an asset by paying or committing to pay a sum of money on a certain date. Table 22.1 presents the comparison between a call option on a company’s stock inputs and the VC fund equivalent within the Black–Scholes formula.

As already stated, these options are rather complex and therefore difficult to model. However, as a way of thinking, it is worth analysing the value drivers of the Black–Scholes formula. One of its main inputs is the standard deviation, or the uncertainty related to the cash flows of the underlying asset. It is interesting to note that, while for the DCF model

**Table 22.1** Comparison between a call option on a company’s stock and the implicit right to invest in a follow-on fund

Call option on a company’s stock	Black–Scholes input
	Implicit right to invest in a follow-on fund
Exercise price ( $X$ )	Present value of the expected drawdowns
Stock price ( $S$ )	Present value of the expected distributions
Maturity ( $T$ )	The latest date the investment decision can be taken
Standard deviation of returns on the stock ( $\sigma$ )	Uncertainty: riskiness of the cash flows and especially the distributions
Time value of money ( $r_f$ )	Risk-free rate of return

the value decreases with the increase of the uncertainty, for real options it is the contrary.<sup>6</sup> Therefore, assuming that you have two equivalent investment proposals in term of NPV, the one that carries the highest level of uncertainty should be favoured.

Compared to tradable financial options, more parameters need to be estimated for real options, as they cannot be observed in the market. Therefore, it is highly difficult to quantify real options embedded in a private equity fund. However, even in the context of private equity, it is possible to classify within broad categories of real option values (such as high, medium and low) by analysing, for example, the following:

- Macro-economic research aims to identify possible changes in regulation, legislation, tax, education, etc.
- Technological research assesses the potential for scientific breakthroughs, new key technologies or the application of such technologies.
- A gap analysis can assess how much time the adaptation of the new technology could take. If various elements of an emerging potentially favourable environment are already in place, a more dynamic or even “chaotic” environment could emerge.<sup>7</sup>

Also, the continuous tracking of news, its frequency and importance, can give early warning signals on changes in the environment.

## 22.3 AN EXPANDED STRATEGY AND DECISION FRAMEWORK

### 22.3.1 Decision framework

While previously our decision framework was solely based on known uncertainty and on the fund’s expected performance, we have now to expand the framework so that the embedded real options are taken into account (see Figure 22.1). The goal should be to balance between the real option’s value and its “cost” if any, i.e. the expected underperformance as per DCF.

*Real options are a complement to, not a substitute for, discounted cash flow analysis. To pick the best growth projects, managers need to use the two methods in tandem.*

van Putten & MacMillan (2004)

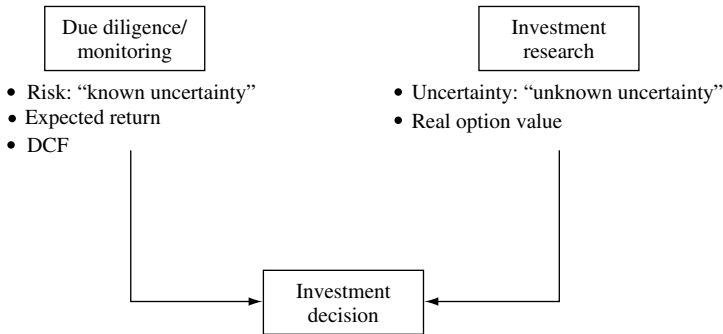
Within an “uncertainty budget”, an investor can take low or even negative NPV projects when they have a potentially high option value. The level of the budget should be set according to the ability of the limited partner to support uncertainty, and his view on the importance of the changes in the environment.

### 22.3.2 Strategy framework

In face of uncertainty, the robust strategy may appear to be “betting on every horse”. However, this is very expensive and a company cannot afford to always bet on everything.

<sup>6</sup> It is also important to note that, for the DCF model, only the non-diversifiable or market risk is relevant, while for real options, it is the total risk, i.e. the specific and the market risks. Therefore, in a diversified portfolio, an increase in the specific risk will have no impact on the DCF value (as it can, by definition, be diversified away), while it will increase the value of the real options.

<sup>7</sup> See e.g. how the Internet took off: the basic infrastructure was already in place. A high number of consumers already had a PC at home and also nearly everybody had a telephone. Without these enablers, the “stormy” development in the last years would not have been possible.



**Figure 22.1** Decision framework

Instead of asking whether you can afford to do something, ask whether in some situations you can afford not to do it. Competitive environments are often difficult to foresee—especially with technical innovations, which are known to be inherently difficult to predict. Past patterns of behaviour are not always reliable guides to the future. But some niche strategies should not be misunderstood as diversification. The jackpot is not the purpose, but rather to generate options for follow-on investments. In this context, there are three main strategic postures to tackle uncertainty:<sup>8</sup>

- *Shaping*: creating option through new structures, cornerstoning.
- *Adapting*: keeping in touch with best practises, react to opportunities.
- *Reserving the right to play*: engaging in due diligence, communicating to industrial continuing interests, investing small amounts in “niche” funds.

*Underestimating uncertainty can lead to strategies that neither defend a company against the threats nor take advantage of the opportunities that higher levels of uncertainty provide.*

Courtney, Kirkland & Viguerie (1997)

In a real option approach, we take into account that a commitment in a long-term illiquid fund must be done under uncertainty and transfer the financial option pricing theory by analogical reasoning to VC fund investment opportunities.

The “strike price”, in the form of investment costs and “expiry date” of the option, is set, and the present value of the underlying VC fund can be determined based on the GEM.

*Moreover, it might be optimal for established LPs like CALPERS or Yale Endowment to invest in a number of younger funds if they feel that this experimentation is necessary to create a pipeline of a new generation of GPs with whom they will have preferential relationships going forward.*

Lerner, Schoar & Wong (2004)

In the example (see Table 22.2), *Fund 1* is clearly a better investment proposal than *Fund 2*, and *Fund 3* should be given preference over *Fund 4*. However, whether *Fund 2* is worth more than *Fund 3* plus its real option value is unclear, and even the rank of *Fund 1* compared to *Fund 3* cannot be determined. Resources are allocated in different weights to expected performance grades. Within a set “uncertainty budget” for each grading class, funds

<sup>8</sup> See Courtney, Kirkland & Viguerie (1997)



**Table 22.2** Real option value and expected performance—example

Real option value	High		Fund 3		
	Medium		Fund 4	Fund 2	Fund 1
		D	C	B	A
Expected performance grade					

are selected with the highest real option value. The real option value is only relevant for the investment decision but not for monitoring and accounting valuation. While the NPV is transferable to other investors, real options often only exist for specific limited partners. The uncertainty budget also depends on the limited partner's view on possible changes in the environment.

For example, while buyouts and mezzanine funds may appear as the best investment decision based on a net present value approach, VC funds should not be ignored as, being more “volatile”, they most probably carry more real option value.

## APPENDIX 22A: A REAL OPTION EXAMPLE

Below, we go through a simple numerical example to illustrate the importance of real options in the context of a portfolio of VC funds. This example is a “back-of-the-envelope” calculation that disregards many complexities that are encountered in practice.

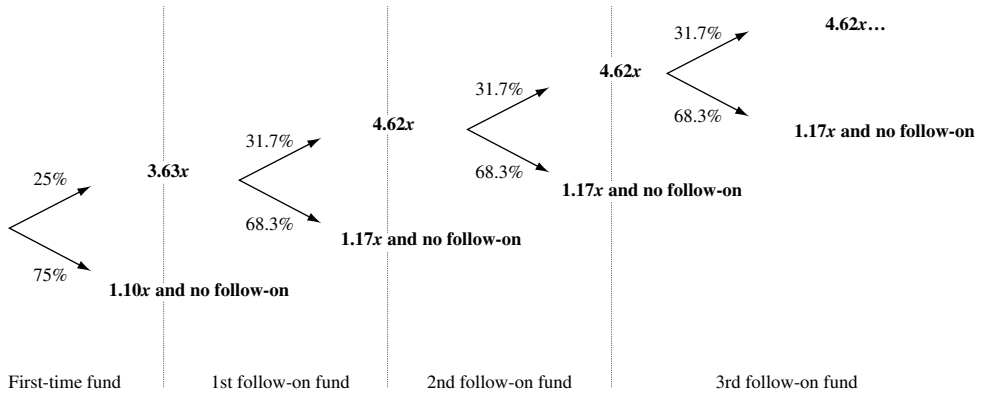
Let's assume that an investor is considering an investment opportunity in a first-time fund. Market statistics tell him that the average performance multiple of first-time funds is  $1.73x$ . Assuming that this investor has a target multiple of  $2.00x$ , he should reject the investment proposal. But such an analysis ignores that private equity is a relationship-driven industry where the investment in successful funds is often “by invitation only” and restricted to existing investors. As stated before, the long-term “manager–investors” relationships and the importance of maintaining them give investors an “implicit” option to invest in the follow-on funds.

Looking at other market statistics<sup>9</sup> (see Table 22.3), it is possible to estimate the impact of such an option using a decision-tree approach. For simplicity, we have assumed that all

**Table 22.3** First time and follow-on funds—market statistics

	First-time funds	Follow-on funds
Average multiple	$1.73x$	$2.27x$
Target multiple	$2.00x$	$2.00x$
Performance	$< 0.27x >$	$0.27x$
Funds above target (%)	25.0%	31.7%
(average multiple of funds above)	$3.63x$	$4.62x$
Funds below target (%)	75.0%	68.3%
(average multiple of funds below)	$1.10x$	$1.17x$

<sup>9</sup> This market statistic is based on estimates for the purpose of illustrating real options valuation.



**Figure 22.2** Binomial tree

investors have the same target multiple, that all funds with a performance below the target cannot raise a follow-on fund, and that investors know with certainty the final multiple of a fund when the follow-on fund is raised, and have ignored the time value of money.

First-time funds yield on average a performance of  $1.73x$ , underperforming by  $0.27x$  the investment cut-off multiple of  $2.00x$ . However, in 25% of cases the final performance of a first-time fund will be above the cut-off point and a follow-on fund will be raised. Follow-on funds yield, on average, a performance of  $2.27x$ , overperforming by  $0.27x$  the target. Assuming that commitments in follow-on funds are on average five times larger than for first-time funds, the implicit right to invest in a follow-on fund is worth  $25\% * 0.27x * 5 = 0.34x$ . In total an investment in a first-time fund is worth  $< 0.27x > + 0.34x = 0.07x$ . To estimate the total value, one would need to assess the value of the rights to invest in all the next potential follow-on funds (see Figure 22.2).



## Beyond the J-curve

Many concepts presented in this book relate to fund investments in private equity in general, although our focus was on venture capital. Venture capital investing is a catalyst as well as a beneficiary of a changing world full of uncertainties. A structured approach to decision making is the precondition for investment success. But what decisions can be made in an uncertain world? In the absence of precise forecasts, decision makers often tend to succumb to natural human instincts, follow fashions, get overly excited about apparently “leading edge” technologies and forget about the fundamental principles of asset management, which often gets them overly depressed after the inevitable setbacks triggered by uncertainty and economic cycles.

### 23.1 SOME DO IT BETTER

According to a recent study undertaken by Lerner, Schoar & Wong (2004), certain types of institutions consistently do a better job at selecting superior private equity funds than others. These authors found that the higher the number of endowments investing in a fund, the stronger it will perform, and that the average IRR of funds in which endowments invested was above 20%.<sup>1</sup> On the other hand, funds selected by finance companies, funds-of-funds and banks usually performed in significantly lower areas.<sup>2</sup> The performance differences across limited partners could partially be the result of different objectives, e.g. banks may give higher priority to maximising their future banking income from the portfolio companies than to a fund’s investment returns.

### 23.2 DEADLY SINS

We believe that mixed agendas and the resulting short-term thinking—with its attempts to time the market—are the most serious of the “deadly sins” in the management of a private equity funds investment programme. As we have seen, superior selection skills are key in this asset class—for this purpose investors have to take the very long view. Lerner, Schoar & Wong (2004) suggest that the endowments’ impressive successes are to a large degree driven by good reinvestment decisions. In line with this, we have explained in this book how superior selection needs to consider the real option value that goes beyond a single fund commitment, and have described how monitoring can help to gather relevant information

---

<sup>1</sup> Somehow surprisingly—at least for those who perceive venture capital as too speculative—the endowments’ exceptional results were entirely driven by investments in VC funds while their investments in buyout funds produced a meagre average annual return of less than 1%.

<sup>2</sup> In all fairness, and as recently pointed out by a representative of a fund-of-funds during a debate around these findings, endowments may have an advantage. It was argued, that compared to other institutions endowments in absolute terms put lower amounts of capital to work, thus making their task probably less difficult.

to support structured decision making. Finally, we find failure to look at the big picture a deadly sin, as regularly evidenced by over-diversification on the one hand and by lack of vintage year spread on the other hand. In short, too often decision making in the management of private equity fund investment programmes appears to be based on “gut instinct”.

### 23.3 STRUCTURE INSTEAD OF “GUT INSTINCT”

The management of a private equity funds investment programme is a complex task and requires a well-structured and disciplined projection and planning process. It occasionally requires complex models, but it will never be precisely quantifiable and cannot be done without a high degree of judgement and without continuous communication among the investment management team. Particularly in venture capital—because of its comparatively restricted share in the financial system and its continuous development—there are fundamental problems that put a precise and reliable risk–return quantification of such investments out of reach. As a consequence, based on our experience, “gut instinct” has so far dominated the management of such programmes. While players in the industry have been continuously improving their fund manager selection, due diligence and structuring techniques, these skills are necessary but not sufficient for a sustainable and profitable programme.

We aimed to build an investment process that overcomes the short-term thinking that can prove disastrous for private equity investing, and to establish a framework that does not rely on instincts and achieves well-considered management of risks and opportunities against the background of continuing uncertainty. We believe that there is significant room for improvement and, in this book, we have presented a Grading-based Economic Model—GEM—that in our eyes reflects the economic reality of private equity fund investing better than approaches currently used in the industry, with its typical comments, “it is too early to tell” or “this is just the J-curve”. The business models in the industry have to address the institutions’ increasing concerns about risk management. In our eyes, private equity fund investment programmes will need to act more like mainstream asset managers with a clearly defined investment process and infrastructures.

### 23.4 PATIENCE IS A VIRTUE

Endowments may enjoy superior returns, not because of better selection skills but because their early involvement gave them a “seat at the table” or a “first mover’s advantage” with the superior fund managers that allows them to continue to invest in subsequent funds of private equity firms that are closed to new investors. It may be premature to jump to conclusions, but we suspect that the endowments’ suggested investment success is the result of a patient, methodical and consistent approach that takes a time horizon of several decades and beyond, rather than seeing a few years as “long-term”. To quote again the Yale University endowment’s Chief Investment Officer, Swensen (2000), successfully “*managed endowments retain forever the ability to provide a particular level of institutional support, justifying the classification of endowment funds as permanent assets. Pursuit of long-term asset preservation requires seeking high returns, accepting the accompanying fundamental risk and associated market volatility*”. Any promise for “top-quartile” performance and liquidity within a few years should be taken with a huge grain of salt. Attempts to “rush” will be self-defeating and can only lead to disappointments. If you aim to preserve your

assets over the long term—possibly centuries—VC funds need to belong to your investment programme. If you expect instant liquidity within a few years, you had better forget it.

### 23.5 TURNING WATER INTO WINE

We close this discussion by coming back to our early observation that investing in venture capital has a lot in common with wine-making. In view of the longevity of the organisation, one could, like Michel Serres did—tongue-in-cheek—in the foreword of Florence Cathiard's book *Art de Vigne*<sup>3</sup>, argue that only those who turn to wine-drinking will survive when the overall water quality turns poor, as it does regularly. Some claim that they have found ways to instantly turn liquidity/"water" into return/"wine", but we remain sceptical. You cannot switch into and out of wine-making—it is a decision for your life (and most probably that of your children). There is a series of obstacles to overcome and you need to learn a lot to master the fine details. Most probably in the early years you produce a lot of "vinegar", and if you give up then, this effort will go entirely unrewarded. Even later, some vintage years will be a disaster. But your wine cellar will help you to bridge these downturns and the spectacular vintages will make the effort worthwhile. They will eventually allow you to sit in the evening and enjoy your glass of wine. Here's to you!

---

<sup>3</sup> Florence Cathiard (2002), *Art de Vigne – Vivre au Pays des Grands Crus*. Aubanel.



## Glossary

**Bad leaver\***

An employee who leaves the company within a short time or who is dismissed for cause, or under other circumstances where the employee is not permitted to retain the benefit of profit-sharing arrangements, such as increased value of shares or carried interest.

**Balanced fund\***

Venture capital funds focused on both early stage and development with no particular concentration on either.

**Business angel**

Business angels are informal investors who are wealthy and entrepreneurial individuals looking to invest in new and growing businesses in return for a share of the equity.

**Buyout\***

A transaction in which a business, business unit or company is acquired from the current shareholders (the vendor).

**Buyout fund\***

Funds whose strategy is to acquire other businesses; this may also include mezzanine debt funds which provide (generally subordinated) debt to facilitate financing buyouts, frequently alongside a right to some of the equity upside.

**Captive fund\***

A fund in which the main shareholder of the management company contributes most of the capital, i.e. where parent organisation allocates money to a captive fund from its own internal sources and reinvests realised capital gains into the fund. Compare with semi-captive fund, independent fund.

**Carried interest\***

A bonus entitlement accruing to an investment fund's management company or individual members of the fund management team. Carried interest (typically up to 20% of the profits

---

\*From the EVCA glossary. Available from [http://www.evca.com/html/PE\\_industry/glossary.asp](http://www.evca.com/html/PE_industry/glossary.asp) (accessed 29 April 2005).



of the fund) becomes payable once the investors have achieved repayment of their original investment in the fund plus a defined hurdle rate.

**Catch-up**

First the general partner has to provide the limited partners with their preferred returns (see hurdle rate). Then there is a catch-up period during which the general partner receives all or the major share of the distributions. The catch-up period ends when the agreed carried interest split is reached.

**Claw-back\***

A claw-back clause requires the general partners in an investment fund to return capital to the limited partners, to the extent that the general partner has received more than its agreed profit split. The claw-back ensures that, if an investment fund exits from strong performers early in its life and weaker performers are left at the end, the limited partners get back their capital contributions, expenses and any preferred return promised in the partnership agreement.

**Closing\***

A closing is reached when a certain amount of money has been committed to a private equity fund. Several intermediary closings can occur before the final closing of a fund is reached.

**Commitment\***

A limited partner's obligation to provide a certain amount of capital to a private equity fund when the general partner asks for capital.

**Corporate venturing\***

There is no single definition of corporate venturing that seems to satisfy all parties, so we distinguish indirect corporate venturing—in which a corporate invests directly in a fund managed by an independent venture capitalist—from a direct corporate venturing programme, in which a corporate invests directly by buying a minority stake in a smaller, unquoted company.

**Development fund\***

Venture capital funds focused on investing in later-stage companies in need of expansion capital.

**Distribution to paid-in (DPI)\***

The DPI measures the cumulative distributions returned to investors (limited partners) as a proportion of the cumulative paid-in capital. DPI is net of fees and carried interest. This is also often called the “cash-on-cash return”. This is a relative measure of the fund's “realised” return on investment.

**Distribution waterfall**

During the lifetime of a fund, liquidity events occur and capital distributions are made based on a predetermined distribution waterfall, whereby limited partners typically receive a certain amount of the profit before the general partners can take their cut.

**Drawdown\***

When investors commit themselves to back a private equity fund, all the funding may not be needed at once. Some is used as drawdown later. The amount that is drawn down is defined as contributed capital.

**Due diligence\***

For private equity professionals, due diligence can apply either narrowly, to the process of verifying the data presented in a business plan/sales memorandum, or broadly, to completing the investigation and analytical process that precedes a commitment to invest. The purpose is to determine the attractiveness, risks and issues regarding a transaction with a potential investee company. Due diligence should enable fund managers to realise an effective decision process and optimise the deal terms.

**Early stage\***

Seed and start-up stages of a business.

**Early-stage fund\***

Venture capital funds focused on investing in companies in the early part of their lives.

**Equalisation premium**

Investors who become limited partners later on have to make up their contribution as if they had invested at the time of the first closing. These equalisation calls are a “pre-financing” charge, estimated based normally on treasury interest rates and on the fund’s cash flows that occurred before the last closing, and are then distributed to the existing investors in the proportions defined by the previous closing before the new investors joined.

**Exit\***

Liquidation of holdings by a private equity fund. Among the various methods of exiting an investment are: trade sale; sale by public offering (including IPO); write-offs; repayment of preference shares/loans; sale to another venture capitalist; sale to a financial institution.

**Exit strategy\***

A private equity house or venture capitalist’s plan to end an investment, liquidate holdings and achieve maximum return.

**Expansion capital\***

Also called development capital. Financing provided for the growth and expansion of a company, which may or may not break even or trade profitably. Capital may be used to: finance increased production capacity; market or product development; provide additional working capital.

**Expected performance grading**

The expected performance grading is based on the interim age-weighted average of the quantitative and the qualitative score determined for a private equity fund.

**Follow-on investment\***

An additional investment in a portfolio company which has already received funding from a venture capitalist.

**Fund\***

A private equity investment fund is a vehicle for enabling pooled investment by a number of investors in equity and equity-related securities of companies (investee companies). These are generally private companies whose shares are not quoted on any stock exchange. The fund can take the form of either a company or an unincorporated arrangement, such as a limited partnership.

**Fund age\***

The age of a fund (in years) from its first drawdown to the time an IRR is calculated.

**Fund focus (investment stage)\***

The strategy of specialisation by stage of investment, sector of investment, geographical concentration. This is the opposite of a generalist fund, which does not focus on any specific geographical area, sector or stage of business.

**Fund-of-funds\***

A fund that takes equity positions in other funds. A fund-of-funds that primarily invests in new funds is a primary fund-of-funds. One that focuses on investing in existing funds is referred to as a secondary fund-of-funds.

**Fund size\***

The total amount of capital committed by the limited and general partners of a fund.

**Fundraising\***

The process in which venture capitalists themselves raise money to create an investment fund. These funds are raised from private, corporate or institutional investors, who make commitments to be invested by the fund's general partner.

**Gatekeepers\***

Specialist advisers who provide assistance to institutional and corporate investors when making private equity investments.

**General partner\***

A partner in a private equity management company who has unlimited personal liability for the debts and obligations of the limited partnership and the right to participate in its management.

**Generalist fund\***

Funds with either a stated focus of investing in all stages of private equity investment, or funds with a broad area of investment activity.

**Grading**

See expected performance and operational status grading.

**Hurdle rate\***

The IRR that private equity fund managers must return to their investors before they can receive carried interest.

**Independent fund\***

One in which the main source of fund-raising is from third parties. Compare with captive fund, semi-captive fund.

**Institutional investor\***

An investor, such as an investment company, mutual fund, insurance company, pension fund, or endowment fund, which generally has substantial assets and experience in investments. In many countries, institutional investors are not fully protected by securities laws because it is assumed that they are more knowledgeable and better able to protect themselves.

**Internal age**

The internal age—as opposed to the calendar age—of a fund ranges between 0 and 1. Quantitative and qualitative scores are given different weights, depending on the fund's internal age, to determine the fund's expected performance grade.

**Internal Rate of Return (IRR)\***

The IRR is the interim net return earned by investors (limited partners), from the fund from inception to a stated date. The IRR is calculated as an annualised effective compounded rate of return, using monthly cash flows to and from investors, together with the residual value as a terminal cash flow to investors. The IRR is therefore net, i.e. after deduction of all fees and carried interest. In cases of captive or semi-captive investment vehicles without fees or carried interest, the IRR is adjusted to create a synthetic net return, using assumed fees and carried interest.

**J-curve\***

The curve generated by plotting the returns generated by a private equity fund against time from inception to termination.

**Key person provision**

If one of the named key persons departs the fund team or sells his interests into the fund management company, the key person provision allows limited partners to suspend contributions and investment activities until replacement is found or even to terminate the fund.

**Later stage\***

Expansion, replacement capital and buyout stages of investment. Compare with early stage.

**LBO (leveraged buyout)\***

A buyout in which the NewCo's capital structure incorporates a particularly high level of debt, much of which is normally secured against the company's assets.

**Lead investor\***

Investor who has contributed the majority share in a private equity joint venture or syndicated deal.

**Limited partner\***

An investor in a limited partnership, i.e. a private equity fund. Compare with general partner.

**Limited partnership\***

The legal structure used by most venture and private equity funds. The partnership is usually a fixed-life investment vehicle, and consists of a general partner (the management firm, which has unlimited liability) and limited partners (the investors, who have limited liability and are not involved in the day-to-day operations). The general partner receives a management fee and a percentage of the profits. The limited partners receive income, capital gains and tax benefits. The general partner (management firm) manages the partnership using the policy laid down in a partnership agreement. The agreement also covers, terms, fees, structures and other items agreed between the limited partners and the general partner.

**Management buy-in (MBI)\***

A buyout in which external managers take over the company. Financing is provided to enable a manager or group of managers from outside the target company to buy into the company with the support of private equity investors.

**Management buyout (MBO)\***

A buyout in which the target's management team acquires an existing product line or business from the vendor with the support of private equity investors.

**Management fees\***

Compensation received by a private equity fund's management firm. This annual management charge is equal to a certain percentage of investors' initial commitments to the fund.

**Mature funds\***

Funds that have been in existence for over 2 years.

**Mezzanine finance\***

Loan finance that is half-way between equity and secured debt, either unsecured or with junior access to security. Typically, some of the return on the instrument is deferred in the form of rolled-up payment-in-kind interest and/or an equity kicker. A mezzanine fund is a fund focusing on mezzanine financing.

**Multiple**

See total value to paid-in (TVPI).

**Niche strategy**

The definition of a niche strategy is rather amorphous. In the extreme it is everything other than plain vanilla venture capital and buyouts.

**Operational status grade**

Operational status grades complement the expected performance grades. They capture information that is conceptually close to event risk. They relate to events during the lifetime of a private equity fund that were unknown pre-investment, but are considered to have an impact on the private equity fund's expected return.

**Peer group**

A group of funds that have a similar risk profile, i.e. with the same style or specialisation, and raised during similar market environments (typically based on vintage years).

**Placement agent\***

A person or entity acting as an agent for a private equity house in raising investment funds.

**Pooled IRR\***

The IRR obtained by taking cash flows from inception, together with the residual value for each fund, and aggregating them into a pool as if they were a single fund. This is superior to either the average, which can be skewed by large returns on relatively small investments, or the capital weighted IRR, which weights each IRR by capital committed. This latter measure would be accurate only if all investments were made at once at the beginning of the fund's life.

**Portfolio company (or investee company)\***

The company or entity into which a private equity fund invests directly.

**Pre-emption rights\***

Rights of existing shareholders to have the first opportunity to purchase shares from a departing shareholder (pre-emption on transfer), or to subscribe for new shares issued by the company (pre-emption on issue).

**Preferred return**

See hurdle rate.

**Private equity\***

Private equity provides equity capital to enterprises not quoted on a stock market. Private equity can be used to develop new products and technologies, to expand working capital, to make acquisitions, or to strengthen a company's balance sheet. It can also resolve ownership and management issues. A succession in family-owned companies, or the buyout and buyin of a business by experienced managers, may be achieved using private equity funding. Venture capital is, strictly speaking, a subset of private equity and refers to equity investments made for the launch, early development or expansion of a business.

**Private placement memorandum\***

Brochure presented by a general partner in the process of raising funds. This document is dedicated to potential investors (limited partners), and usually contains (amongst other information) a presentation of the management team's track record, terms and conditions and investment strategies.

**Qualitative score**

The qualitative score is based on the assessment of the key dimensions that composed an investment proposal. The qualitative scoring's main goal is to standardise the analysis, to allow comparability and to insure its consistency and completeness.

**Quantitative score**

The quantitative score is based on comparison against financial peer group data.

**Quartile**

Quartiles are a commonly used measure for sample populations. The first quartile is the point where 25% of the sample is above the quartile and 75% below. The second quartile is

the same as the median: the point where half the sample is above and half below. The third quartile is the point where 75% of the sample is above and 25% below.

**Realisation ratios\***

Benchmark measurements of investment performance that complement the IRR. Realisation ratios are distributions to paid-in capital (DPI), residual value to paid-in capital (RVPI) and total value to paid-in (TVPI). These are measures of returns to invested capital. These measures do not take the time value of money into account.

**Residual value to paid-in capital (RVPI)\***

A realisation ratio which is a measure of how much of a limited partner's capital is still tied up in the equity of the fund, relative to the cumulative paid-in capital. RVPI is net of fees and carried interest.

**Rounds\***

Stages of financing of a company. A first round of financing is the initial raising of outside capital. Successive rounds may attract different types of investors as companies mature.

**Secondary market\***

A market or exchange in which securities are bought and sold following their initial sale. Investors in the primary market, by contrast, purchase shares directly from the issuer.

**Secondary transaction\***

There is a rapidly developing market in interests in existing private equity funds, referred to as "secondaries". A secondary offering may comprise a single manager's entire fund of direct investments or, more commonly, a portfolio of interests in a number of different funds. There is a growing number of well-financed investors who specialise in purchasing interests in existing funds from their original investors. Generally, however, investors should not assume that secondary purchasers will offer a liquid or attractive exit path.

**Securitisation\***

Through securitisation, incorporated fund vehicles have been able to offer interests to investors in the form of notes or bonds with credit ratings, including convertible securities. Such interests may also benefit from partial or complete guarantees of the principal sum invested. To date, such products have usually been funds-of-funds structured as "evergreen" funds, meaning that realised investment returns are not distributed to investors but are reinvested within the fund. Likewise, commitments have generally been drawn down at the outset, rather than on a just-in-time basis for investment. These funds are normally quoted.

**Seed stage\***

Financing provided to research, assess and develop an initial concept before a business has reached the start-up phase.

**Semi-captive fund\***

A fund in which, although the main shareholder contributes a large part of the capital, a significant share of the capital is raised from third parties.

**Start-up\***

Financing provided to companies for product development and initial marketing. Companies may be in the process of being set up, or may have been in business for a short time but have not sold their product commercially.

**Term sheet\***

A short document summarising the principal financial and other terms of a proposed investment. It is usually non-binding, but may impose some legal obligations on the investor and the company.

**Total value to paid-in (TVPI)\***

A realisation ratio which is the sum of distributions to paid-in capital (DPI) and residual value to paid-in capital (RVPI). TVPI is net of fees and carried interest.

**Track record\***

A private equity management house's experience, history and past performance.

**Uncertainty**

Economists typically differentiate between "risk" and "uncertainty". Risk exists when a probability based on past experience can be attached to an event, whereas uncertainty exists when there is no objective way to determine its probability.

**Venture capital\***

Professional equity co-invested with the entrepreneur to fund an early stage (seed and start-up) or expansion venture. Offsetting the high risk the investor takes is the expectation of higher-than-average return on the investment.

**Venture capitalist\***

The manager of private equity fund who has responsibility for the management of the fund's investment in a particular portfolio company. In the hands-on approach (the general model for private equity investment), the venture capitalist brings in not only moneys as equity capital (i.e. without security/charge on assets), but also extremely valuable domain knowledge, business contacts, brand-equity, strategic advice, etc.

**Vesting\***

The process of granting full ownership of conferred rights, such as stock options and warrants (which then become vested rights). Rights which have not yet been vested (unvested rights) may not be sold or traded and can be forfeited.

**Vintage year\***

The year of fund formation and first drawdown of capital.

**Vintage year cohort**

Benchmarks allow comparing performance results of the industry by a cohort group of funds formed in the same year, e.g. the so-called vintage year.





## Bibliography

- 3i Plc (2002) *Reports and Accounts, 2001*. London, 3i plc; [www.3i.com](http://www.3i.com)
- AFIC, BVCA & EVCA (2004) *Consultation Document—Valuation Guidelines for Private Equity and Venture Capital*. Brussels, EVCA; [www.evca.com](http://www.evca.com)
- AIMA (2002) *AIMA's Illustrative Questionnaire for Due Diligence of Fund-of-Funds Managers*. London, AIMA; [www.aima.org](http://www.aima.org)
- Aitchinson, M. *et al.* (2001) *Current Topics 2001*. Edinburgh, Faculties of Actuaries Students' Society; [http://www.actuaries.org.uk/Display\\_Page.cgi?url=/library/local\\_society\\_papers.xml](http://www.actuaries.org.uk/Display_Page.cgi?url=/library/local_society_papers.xml)
- Allchorne, T. (2004) Mowbray capital launches European venture FoFs. *European Venture Capital Journal*, **May**.
- Alphonse, P., Hellmann, T. & Wei, J. (1999) *Minority Private Equity: A Market in Transition*. *Journal of Private Equity*. Vol. 2(4): 27–45.
- AltAssets (2002a) *Institutional Investor Profiles*, Volume I. London, AltAssets; [www.altassets.com](http://www.altassets.com)
- AltAssets (2002b) *Institutional Investor Profiles*, Volume II. London, AltAssets; [www.altassets.com](http://www.altassets.com)
- AltAssets (2003a) *Fund-of-Funds Forum Paper*. London, AltAssets; [www.altassets.com](http://www.altassets.com)
- AltAssets (2003b) *Institutional Investor Profiles*, Volume III. London, AltAssets; [www.altassets.com](http://www.altassets.com)
- AltAssets Research (2002) *The Limited Partner Perspective—A Survey of European Institutional Investors*. London, AltAssets, May.
- Altman, E.I. & Rijken, H.A. (2003) Influence of migration policies on the dynamics of credit agency ratings. New York, New York University, Stern, Salomon Center, Working Paper Series S-03-11, April.
- Andrews, D., Linnell, I. & Prescott, C. (1999) *Rating Preference Stock and Hybrid Securities of Financial Institutions*. Financial Institutions Special Report. London, Fitch; [www.fitchratings.com/corporate/reports/report.france.cfm?rpt\\_id=50114](http://www.fitchratings.com/corporate/reports/report.france.cfm?rpt_id=50114)
- Arthus, P. & Teiletche, J. (2004) *Asset Allocation and European Private Equity: A First Approach Using Aggregated Data*. Brussels, EVCA.
- Bailey, J.V., Richards, T.M. & Tierney, D.E. (1990) Benchmark portfolios and the manager/plan sponsor relationship. *Current Topics in Investment Management*, F. J. Fabozzi and T. Dossa Fabozzi (eds). New York, Harper & Row, pp. 71–85.
- Baker, G.P. & Smith, G.D. (1998) *The New Financial Capitalists—Kohlberg Kravis Roberts and the Creation of Corporate Value*. Cambridge, Cambridge University Press.
- Bance, A. (2004) *Why and How to Invest in Private Equity?*, 2nd edn. Zaventem, EVCA Investor Relations Committee Paper, European Venture Capital and Private Equity Association; [http://www.evca.com/ht,availableatml/publications/bookstore\\_investor.asp](http://www.evca.com/ht,availableatml/publications/bookstore_investor.asp)
- Barber, J. & Zage, L. (2002) *Moving in Tandem?* London, Helix Associates.
- Barès, P.A., Gibson, R. & Gyger, S. (2001) *Style Consistency and Survival Probability in the Hedge Fund Industry*. Zurich, Swiss Banking Institute; [www.isb.unizh.ch](http://www.isb.unizh.ch)
- Basel Committee on Banking Supervision (2001) Working paper on risk-sensitive approaches for equity exposures in the banking book for IRB banks. Basel, August.

- Bauer, M., Bilo, S. & Zimmermann, H. (2001) Publicly traded private equity: an empirical investigation, 2nd Draft, Working Paper No. 5/01. Universität St. Gallen, Swiss Institute of Banking and Finance.
- Beaudoin, T.A. (2003) *Top-Tier VCs—The More Things Change, the More they Remain the Same?* Boston, MA, Testa, Hurwitz & Thibault Research.
- Beinhocker, E.D. (1999) On the origin of strategies. *McKinsey Quarterly*, **4**.
- Benson, B. (1990) *The Enterprise of Law: Justice Without a State*. San Francisco, CA, Pacific Research Institute for Public Policy.
- Blaydon, C. & Horvath, M. (2003a) LPs need to trust general partners in setting valuations. *Venture Capital Journal*, **March**.
- Blaydon, C. & Horvath, M. (2003b) What's a company worth? Depends which GP you ask. *Venture Capital Journal*, **May**.
- Blaydon, C., Wainwright, F. & DeOliveira, E. (2004) *Limited Partnership Agreement Project—Results of GP, LP Surveys*. Dartmouth, Center for Private Equity and Entrepreneurship, Tuck School of Business.
- Bonadurer, W. (2003) Valuation by multiple. Paper prepared for doctorate seminar in corporate finance, University of St. Gallen.
- Bookstaber, R. (1999) Risk management in complex organizations. *Association for Investment Management and Research*, **March/April**.
- Borel, P. (2004) Making private equity work. *Private Equity International*, **November**.
- Borello, I. & Bader, H. (2004) *Hedge Funds: A Threat to Private Equity?* Geneva, Unigestion.
- Bosut, L. (2003) *Private Equity and Venture Capital*. London, AltAssets.
- Brands, S. & Gallagher, D.R. (2003) *Portfolio Selection, Diversification and Funds-of-Funds*. Sydney, School of Banking and Finance, The University of New South Wales.
- Braunschweig, C. (2001) Beset by falling IRRs, CalPERS plays defence. *Venture Capital Journal*, **October**.
- Brealey, R. & Myers, S. (2000) *Principles of Corporate Finance*, 6th edn. New York, McGraw-Hill.
- Brett, B. (2002) *Secondary Sales of Private Equity Interests*. New York, Venture Capital Fund of America.
- British Venture Capital Association (2003) *Reporting and Valuation Guidelines*. London, BVCA.
- Brown, A. & Morrow, B. (2001) Private equity investing. Research Note. St. Louis, MO, Hammond Associates; [www.haifc.com/attides/priveq.PDF](http://www.haifc.com/attides/priveq.PDF)
- Brull, S. (2002) Style shift. *Institutional Investor*, **May**, 107–115.
- Burgel, O. (2000) *UK Venture Capital and Venture Capital as an Asset Class for Institutional Investors*. London, BVCA.
- Burgel, O. & Murray, G.C. (2000) *The Impact of Fund Size and Investment Preferences on Venture Capitalists' Returns*. London, London Business School.
- Burrough, B. & Helyar, J. (1990) *Barbarians at the Gate: The Fall of RJR Nabisco*. New York, Harper Collins.
- Bushrod, L. (2003a) Pick a number, any number! *European Venture Capital Journal*, **June**.
- Bushrod, L. (2003b) Fees: unable to move out of the spotlight. *European Venture Capital Journal*, **July/August**.
- Bushrod, L. (2003c) Ratings: transparency by another name. *European Venture Capital Journal*, **September**.
- Bushrod, L. (2004a) Grappling the fund management problem. *European Venture Capital Journal*, **March**.
- Bushrod, L. (2004b) To co-invest or not to co-invest? *European Venture Capital Journal*, **April**.
- Bushrod, L. (2004c) Does branding apply to private equity? *European Venture Capital Journal*, **May**.
- Bygrave, W.D., Hay, M. & Peters, J.B. (1999) *The Venture Capital Handbook*. Harlow, UK, Pearson Education Ltd.
- Callan Associates (2003) *Private Equity Market Trends*. San Francisco, CA, Callan Associates; [www.callan.com/resource/periodicals](http://www.callan.com/resource/periodicals)
- Camp, J.J. (2002) *Venture Capital Due Diligence*. New York, Wiley.
- Carcano, B. (2001) Debt–equity Guidelines and the “classification of securities”. NAIC Securities Valuation Office, *SVO Research*, **1**(3).
- Castle, J.K. (2001) *Asset Allocation: Deciding Between Venture Capital and Buyouts*, Part I. Sacramento, CA, Institute for Fiduciary Education.

- Chen, J. (2004) *Economic and Biological Evolution: A Real Option Approach*. Department of Finance and Accounting, National University of Singapore.
- Cheng, P., Baierl, G. & Kaplan, P.D. (2002) Venture capital and its role in strategic asset allocation. *Journal of Portfolio Management*, **28**(2, Winter), 83 ff.
- Cheung, L. *et al.* (2003) *Rating Private Equity CFOs: Cash Flow Benchmarks*. New York, Standard & Poor's CDO Research Special Report.
- Cheung, L., Kapoor, V. & Howley, C. (2003) *Rating Private Equity CFOs: Stochastic Market Cash Flows*. New York, Standard & Poor's CDO Research Special Report.
- Cochrane, J.H. (2001) *The risk and return of venture capital*. NEBR Working Paper Series, WP8066. Cambridge, MA, NEBR.
- Cohen, P. & Aiello, J. (2004) *Secondary Investing in Private Equity Funds: Primary Issues for General Partners*. London, AltAssets.
- Collins, M. (2004) *Creeping Regulation of Private Equity Fund Managers*. Boston, MA, Testa, Hurwitz & Thibault, Venture Update.
- Courtney, H.G., Kirkland, J. & Viguerie S.P. (1997) Strategy under uncertainty. *Harvard Business Review*, **November–December**.
- Covitz, D. & Liang, N. (2002) *Recent Developments in the Private Equity Market and the Role of Preferred Returns*. Washington, DC, Division of Research and Statistics, Board of Governors of the Federal Reserve System.
- Credit Suisse Group (2001) *The New Basel Capital Accord, Consultative Paper of Jan. 16, 2001—Comments*, May. Zurich, Credit Suisse Group.
- Crouhy, M., Galai, D. & Mark, R. (2001) Prototype risk rating system. *Journal of Banking and Finance*, **25**.
- Cullen, A. (2004) *Locating Venture Returns*. Boston, MA, HBS Working Knowledge.
- Cumming, D.J. (2003) *The Determinants of Venture Capital Portfolio Size: Empirical Evidence*. School of Business, University of Alberta.
- Cumming, D.J., Fleming, G.A. & Schwienbacher, A. (2004) Style drift in private equity. Amherst, MA, Center for International Securities and Derivatives Markets, Working Paper, May.
- Damodaran, A. (2001) *The Dark Side of Valuation. Valuing Old Tech, New Tech, and New Economy Companies*. Upper Saddle River, NJ, Financial Times Prentice-Hall: <http://vig.prenhall.com/catalog/academic/product/0,1144,013040652X-00>
- de Las Heras, E. (2000) Understanding private equity—an institutional investor's perspective. *Morgan Stanley Dean Witter Global Pensions Quarterly*, August.
- Diem, G. (2002) The Information Deficiency Problem of Private Equity Funds-of-funds: A Risk and Monitoring Management Perspective. MBA Thesis, University of Birmingham.
- Diller, C. & Kaserer, C. (2004) European private equity funds—a cash flow-based performance analysis. Technische Universität München, Center for Entrepreneurial and Financial Studies, Working Paper No. 2004-01.
- Dowd, K. (1998) *Beyond Value at Risk. The New Science of Risk Management*. Chichester, Wiley.
- Dunbar, N. (2000) The challenge of private equity. *Riskwaters*, **October**.
- Edgar, L., Sweeney, G. & Taylor, J. (2001) *The Management and Sale of Distributed Securities*. San Francisco CA, W. R. Hambrecht Asset Management Group.
- Edvinsson, L. & Malone, M.S. (1997) *Intellectual Capital*. New York, HarperBusiness.
- Elsea, J. (2003) *Accessing Top Quartile Venture Capital Funds*. Sacramento, CA, Institute for Fiduciary Education.
- Emery, K. (2003) Private equity risk and reward: assessing the stale pricing problem. *Journal of Private Equity*, **Spring**, 43–50.
- Emkin, A.R. (2003) *Changing Relationships ... Changing Terms*. Sacramento, CA, Institute for Fiduciary Education.
- Ender, R. & Jaeggi, A. (2003) Investieren in Private Equity kann sich lohnen. *Finanz und Wirtschaft*; <http://www.adveq.com/index.cfm?page=37&news=107> (accessed 8 January 2003).
- Erturk, E., Cheung, L. & Fong, W. (2001) *Private Equity Fund-of-Funds: Overview and Rating Criteria*. New York, Standard and Poors Publication.
- European Private Equity & Venture Capital Association (EVCA) (2002) The economic and social impact of venture capital in Europe. Research Paper. Zaventem, EVCA.
- European Private Equity & Venture Capital Association (EVCA) (2003) *EVCA Guidelines*. Zaventem, EVCA.

- Evans, H. & Marks, A. (2002) *Distributions in Kind: Avoiding the Pitfalls*. London, AltAssets.
- Fama, G. & French, G. (1997) Industry costs of equity. *Journal of Financial Economics*, **43**, 153–193.
- Flag Venture Management (1995) *The J-Curve*. Venture Insights 3rd Quarter. Stamford, CT, Flag Venture Management, Special Report; [www.flagcapital.com](http://www.flagcapital.com)
- Flag Venture Management (2001) *The Right Level of Diversification*. Venture Insights 1st Quarter. Stamford, CT, Flag Venture Management, Special Report; [www.flagcapital.com](http://www.flagcapital.com)
- Flag Venture Management (2002a) *What's it Worth? Valuation Methodology 101*. 1st Quarter. Stamford, CT, Flag Venture Management, Special Report; [www.flagcapital.com](http://www.flagcapital.com)
- Flag Venture Management (2002b) *Venture Confidential—Is Disclosure Constructive?* 000, 3rd Quarter. Stamford, CT, Flag Venture Management, Special Report; [www.flagcapital.com](http://www.flagcapital.com)
- Flag Venture Management (2003a) *Evaluating Funds-of-Funds*. 3rd Quarter. Stamford, CT, Flag Venture Management Special Report; [www.flagcapital.com](http://www.flagcapital.com)
- Flag Venture Management (2003b) *Let's Talk Terms*. 4th Quarter 2003. Stamford, CT, Flag Venture Management, Special Report; [www.flagcapital.com](http://www.flagcapital.com)
- Folkerts-Landau, D. (2001) *Structured Private Equity: An Old Market Becomes an Emerging Asset Class*. Frankfurt, Deutsche Bank Global Markets Research.
- Fort Washington Capital Partners (2004) *Investing in Private Equity through a Fund of Funds*. White paper. Cincinnati, OH, Ford Washington Capital Partners.
- Fraser-Sampson, G. (2004a) *Private Equity Investing: An Overview*. London, Mowbray Capital; <http://www.altassets.com/casefor/sectors/2004/nz4982.php>; [www.mowbraycapital.com](http://www.mowbraycapital.com)
- Fraser-Sampson, G. (2004b) *Institutional Investor Profile*. AltAssets. October.
- French (1997) Industry costs of equity. *Journal of Financial Economics*, **43**, 153–193.
- Fritz, S. (2001) Examining the latest practical methodologies for effective validation and back testing of the different internal credit rating systems and assessing the level of accuracy achieved. Geneva, ICBI Risk Management Conference; [www.icbi-uk.com](http://www.icbi-uk.com)
- Fugazy, D (2002) European market pummels American venture firms. *Venture Capital Journal*, **July**.
- Fung, W. & Hsieh, D. (1997) *Is Mean-Variance Analysis Applicable to Hedge Funds?* Fuqua School of Business, Duke University, Durham, USA.
- Gautam, A., Gronning, J. & Hoj, A. (2002) *Coming of Age: The European Venture Capital Industry*. Research Report. London, Brask & Company, July; [www.braskandcompany.com](http://www.braskandcompany.com)
- Geltner, D. & Ling, D. (2000) *Benchmark and Index Needs in the US Private Real Estate Investment Industry: Trying to Close the Gap*. Hartford, CT, RERI study for the Pension Real Estate Association; [www.reri.org/research/RERI\\_Rept\\_final.pdf](http://www.reri.org/research/RERI_Rept_final.pdf)
- Giacometti, M. (2001) *Asset Allocation in Private Equity*. Sacramento, CA, Institute for Fiduciary Education.
- Gottschalg, O., Phalippou, L. & Zollo, M. (2003) Performance of private equity funds: another puzzle? Fontainebleau, INSEAD–Wharton Alliance Center for Global Research & Development, Working Paper 2003/93/SM/ACGRD; [www.insead.edu/alliance/faculty/2003–93.pdf](http://www.insead.edu/alliance/faculty/2003–93.pdf)
- Grove Street Advisors (2002) *The Case for Investing with New and Emerging Private Equity Fund Managers*. Wellesley, MA, Grove Street Advisors; [www.grovestreetadvisors.com](http://www.grovestreetadvisors.com)
- Gull, J.S. (2003) Comment letter on the proposed venture capital and private equity provisions. Charlottesville, MA, AIMR; [www.efainstitute.org](http://www.efainstitute.org)
- Healy, B. (2001) Calpers posts fund's record on web site—money managers aghast that pension investor shows returns, rankings. *Boston Globe*, **August**.
- Hellman, R.B. & Katz, E. (2002) *The Evolution of Partnership Terms—Aligning GP and LP Interests*. Sacramento, CA, Institute of Fiduciary Education.
- Henderson Global Investors (2002) The case for smallest sized private equity funds. Chicago, IL, Henderson Global Investors.
- Henker, T. (1998) Naïve diversification for hedge funds. *Journal of Alternative Investments*, **Winter**.
- Himelstein, L. (2002) Venture capital—all cashed up with no place to go. *Business Week*, **September**.
- Houlihan Valuation Advisors & Ventureone Study (1998) The pricing of successful venture capital backed high-tech and life sciences companies. *Journal of Business Venturing*, **13**.
- Hsu, C.H. & Wei, H.J. (2003) *Stock Diversification in the US Equity Market*. Long Beach, CA, College of Business, California State University.
- Hueng C.J. & Yau, R. (2004) Investor preferences and portfolio selection: is diversification an appropriate strategy? Working paper, Western Michigan University, Kalamazoo, MI; <http://homepages.wmich.edu/chueng/dj30.pdf>

- Hutchings, W. (2003) Vontobel cuts private equity exposure. *Private Equity Funds and Investors*, efinancialnews.com
- Ibbotson, R., Kaplan, P. & Peterson, J. (1997) Estimates of small stock betas are much too low: adjusted estimates of beta are positively related to future common stock returns. *Journal of Portfolio Management*, Summer.
- Inderst, R. & Muennich, F. (2003) *The Benefits of Shallow Pockets*. London, London School of Economics.
- Institutional Investor (2002) Deutsche Bank, Lazard securitize private equity. *Alternative Investment News*, April.
- International Accounting Standards Committee (2001) *International Accounting Standards 2001*. London, IASC.
- International Accounting Standards Board (2001) *Exposure Draft Proposed Amendments to IAS 39*. London, IASB.
- International Swaps and Derivatives Association (2001) Modelling equity risk exposure—response to the Models Task Force. New York, ISDA letter to Models Task Force of Financial Service Authority.
- Investor Risk Committee (2001) *Hedge Fund Disclosure for Institutional Investors*. New York, International Association of Financial Engineers.
- Jaeger, L. (2002) *Management for Multi-manager Portfolios of Alternative Investments*. Zug, Swiss Alternative Investment Strategies AG.
- Jo, H. (2002) *Perspectives and Problems of Private Equity Funds-of-Funds*. Santa Clara, CA, Leavey School of Business & Administration.
- Kaneyuki, M. (2003) Creative valuation techniques for venture capital fund reporting. *Finanz Betrieb*, July/August, 506–511.
- Kaplan, S.N. & Schoar, A. (2004) Private equity performance: returns, persistence and capital flows. *Journal of Finance* (forthcoming: reference in Lerner, Schoar & Wong, 2004).
- Kaserer, C. & Diller, C. (2004) *European Private Equity—A Cash Flow-based Performance Analysis*. Brussels, EVCA.
- Kaserer, C., Wagner, N. & Achleitner, A.-K. (2004) Managing investment risks of institutional private equity investors—the challenge of illiquidity. In Frenkel, M., Hommel, U. & Rudolf, M. (eds): *Risk Management*, 2nd edn. Springer, Berlin.
- Kelly, T.G. (2002) Private equity: a look at a maturing asset class. Presentation to Chicago GSB Finance Round Table.
- Kempf, A. & Memmel, C. (2003) *On the Estimation of the Global Minimum Variance Portfolio*. University of Cologne, Department of Finance, Cologne: <http://ssrn.com/abstract=385760>
- Kerins, F., Smith, J.K. & Smith, R. (2001) New venture opportunity cost of capital and financial contracting. Claremont Graduate University, Working Paper in Economics: [http://papers.ssm.com/s/availableat/013/papers.cfm?abstract\\_id=273882](http://papers.ssm.com/s/availableat/013/papers.cfm?abstract_id=273882)
- King, D.A. & Young, M.S. (1994) Why diversification doesn't work? *Real Estate Review*, 25 (2, Summer), 6–12.
- Kogelman, S. (1999) *The Importance of Asset Allocation in Managing Private Equity Commitments*. New York, Investment Management Research, Goldman Sachs Client Research and Strategy Group.
- Kolotas, P., Kearns, P. & Le Merre, M. (2003) *New Economy Development Fund S.A. ("TANEO")*. London, Fitch Ratings Structured Finance Presale Report.
- KPMG (2002) *Insight into Portfolio Management*. Report in cooperation with Manchester Business School, February; [www.kpmg.com](http://www.kpmg.com)
- Kraemer-Eis, H. (2003) Modelle bergen Risiken. *Kredit & Rating Praxis*, 2.
- Krahen, J.P. & Weber, M. (2000) Generally accepted rating principles: a primer. Working paper (to be published).
- Layton, D.H. (2000) Managing risk in the 21st century, IIB Speech, June; [www.iib.org](http://www.iib.org)
- Leiter, J.M.E. (2001) Performance in private equity. McKinsey & Company Presentation at EVCA Investors Workshop, Munich.
- Lerner, J. (1998) The returns to investments in innovative activities: an overview and an analysis of the software industry. Draft, Boston, MA, Harvard Business School.
- Lerner, J. (2000) *The Future of Private Equity: Research and Hypotheses*. Boston, MA, Harvard Business School and National Bureau of Economic Research.
- Lerner, J. & Schoar, A. (2002) The illiquidity puzzle: theory and evidence from private equity. *Journal of Financial Economics*, 72 (1), 3–40.

- Lerner, J., Schoar, A. & Wong, W. (2004) Smart institutions, foolish choices? The limited partner performance puzzle. Working paper, Boston, MA, Harvard Business School.
- Levine, I.J. (2003) Legal and regulatory aspects of applying securitisation techniques to private equity. Presentation at IIR Conference on Private Equity Securitisation; [www.iir-conferences.com](http://www.iir-conferences.com)
- Levine, I.J. & Smith, G. (2004) Securitising private equity portfolios—an attractive proposition? S.J. Berwin article, published courtesy of *British Venture Capital Association Technical Bulletin*.
- Lhabitant, F.S. & Learned, M. (2002) Hedge fund diversification: how much is enough? Research paper No. 52. Geneva, International Center for Financial Asset Management and Engineering, July; <http://www.fame.ch/library/EN/RP52.pdf>
- Littlejohn, A.C. (2003) *LP Disclosure vs. GP Confidentiality*. Sacramento, CA, Institute for Fiduciary Education.
- Ljungqvist, A. & Richardson, M. (2003) The cash flow, return and risk characteristics of private equity. Finance Working Paper No. 03-001, New York University: <http://ssrn.com/abstract=369600>. (accessed 12 October 2004).
- Maginn, J. & Dyrá, G. (2000) *Building Private Equity Portfolios*. St. Louis, MO, Summit Strategies Group; [www.summitstrategies.com](http://www.summitstrategies.com)
- Magnani, P. (2003) Fund-of-funds investment strategy. Unpublished Report. Luxembourg, European Investment Fund.
- Malkiel, B. & Firstenberg, P. (1976) *Managing Risk in an Uncertain Era: An Analysis for Endowed Institutions*. Princeton, NJ, Princeton University Press.
- Mallet, V. (2004) Reformists flex their muscles. *Financial Times*, **February**, 10.
- Malmsten, E., Portanger, E. & Drazin, C. (2001) *Boo Hoo—A Dot.com Story from Concept to Catastrophe*. London, Random House.
- Mangiero, S.M. (2003) Model risk and valuation. *Valuation Strategies*, **March/April**.
- Manigart & al. (2002) Determinants of required return in venture capital investments: a five country study. *Journal of Business Venturing*, **17**(4, July), 291–312.
- Manyem, S. (2002) *Effect of Investment Focus and Manager Selection in Private Equity Returns*. University of Chicago, Graduate School of Business.
- Markowitz, H. (1952) *Portfolio Selection*. *Journal of Finance* 7 (March), pp. 77–91.
- Mason, E. (2004) *Mass. May Cloak Data to Attract P.E. Funds*. Columbia, MO, The Freedom of Information Center; <http://foi.missouri.edu>.
- Mathonet, P.Y. (2004) *The “Fair” Financing Cost of Venture Capital Funds Investments*. Luxembourg, European Investment Fund.
- Mathonet, P.Y. & Meyer, T. (2004) *How Fair Is my Valuation?* Luxembourg, European Investment Fund.
- Maugain, O. (2001) The evaluation of hedge funds. Doctoral Seminar, International Finance, Prof. Dr Klaus Spremann: [http://www.sbf.unisg.ch/org/sbf/web.usf/c2d5250e0954edd3c12568e40027f306/f1febf02759c139ec1256ba3002e2266/\\$FILE/HedgeFunds.pdf](http://www.sbf.unisg.ch/org/sbf/web.usf/c2d5250e0954edd3c12568e40027f306/f1febf02759c139ec1256ba3002e2266/$FILE/HedgeFunds.pdf)
- Maxwell, R. (2002a) *Private Equity: The Role of Fund-of-Funds Investing*. London, Invesco.
- Maxwell, R. (2002b) *How Due was My Diligence?* London, AltAssets.
- Maxwell, R. (2003a) *To Disclose or Not to Disclose? That is the Question*. London, AltAssets.
- Maxwell, R. (2003b) *Hurdle? What Hurdle?* London, AltAssets.
- Maxwell, R. (2004) *Success and Succession*. London, AltAssets.
- McCune, A. (2001) *Looking at the Nuts and Bolts of the Secondary Market for LP Interests*. New York, Venture Economics.
- McGrady, C. (2002a) *Pricing Private Equity Secondary Transactions*. Dallas, TX, Cogent Partners.
- McGrady, C. (2002b) *The Advantages of Purchasing Secondaries*. Dallas, TX, Cogent Partners.
- McIntosh, W. (2003) *The Proverbial Question—How Do You Create a Better Benchmark?* Sacramento, CA, Institute for Fiduciary Education.
- McLaren, J.M. (2001) *Asset Allocation: Deciding Between Venture Capital and Buyouts*, Part I. Sacramento, CA, Institute for Fiduciary Education.
- Meek, V. (2002) *Bottom of the Pile*. London, AltAssets.
- Meek, V. (2004a) New direction for Swiss listed PE funds? *European Venture Capital Journal*, **April**.
- Meek, V. (2004b) *Time to Deviate From the Standard?* London, AltAssets.
- Mellon Financial Corporation (2003) *Annual Report 2003*. Pittsburgh, PA, Mellon Financial Corporation.
- Metzger, C.E. & Greenwald, T.R. (2004) *Micro View—FOIA Update*. Boston, MA, Testa, Hurwitz & Thibault.

- Meyer, T. & Gschrei, M.J. (2005) *Liquiditätsmanagement in Private Equity und Venture Capital Dachfonds – Herausforderungen und Lösungsansätze*. RWB Schriftenreihe Private Equity. Vol. 2. Munich.
- Meyer, T. & Mathonet, P.Y. (2004) *A Prototype Internal Venture Capital Fund Grading System*. Luxembourg, European Investment Fund.
- Meyer, T. & Weidig, T. (2003) Modelling venture capital funds. *Risk Magazine*, **October**.
- Moise, M. *et al.* (2002) *Going Public with Private Equity CFOs*. London, Fitch Ratings Credit Product Criteria Report, November.
- Moise, M. *et al.* (2003) *Silver Leaf CFO 1 SCA*. London, Fitch Presale Report.
- Mooney, B. (2003) *Timing Secondary Transactions. When Should You Sell, When Should You Buy?* Dallas, TX, Cogent Partners.
- Moskowitz, T. & Vissing-Jørgensen, A. (2002) The returns to entrepreneurial investment: a private equity premium puzzle? *American Economic Review*, **92**, (4), 745–778.
- Moultrup, J. (1998) The multiple-equity fund portfolio investment strategy. *Journal of Financial Planning*, **August**.
- Muller, K.W. (2004) *Formation and Operation of Venture Capital/Private Equity Funds*. Presentation. Palo Alto, CA, Cooley Godward LLP: [http://www.cooley.com/files/tbl\\_s5SiteRepository/FileUpload21/168/A2-2004-Muller.pdf](http://www.cooley.com/files/tbl_s5SiteRepository/FileUpload21/168/A2-2004-Muller.pdf)
- New, D. (2001) An introduction to private equity. *Topics of Interest*. Seattle, WA, Wurts & Associates; <http://wurts.com/>
- Nicholas, J. (2004) *Hedge Fund of Funds Investing: An Investor's Guide*. Princeton, NJ, Bloomberg Press.
- Northedge, R. (2004) Can you hear us Basel? *Real Deals*, **June**.
- Nowak, E., Knigge, A. & Schmidt, D. (2004) *On the Performance of Private Equity Investments: Does Market Timing Matter?* Frankfurt, CEPRES: [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=492982](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=492982).
- Oren, T. (2003) *VC Disclosures, IRRs and the J-Curve*. June 18: <http://www.pacificavc.com/blog/2003/06/18.html> (accessed 24 September 2004).
- Otterlei, J. & Barrington, S. (2003) *Alternative Assets—Private Equity Fund-of-funds*. Minneapolis, MO, Piper Jaffray Private Capital, Special report; <http://www.piperjaffray.com/info3.aspx?id=79>
- Painter, R.A. (2004) *What Is the Market on Terms? A New Look at an Age-old Question*. Boston, MA, Testa, Hurwitz & Thibault; London, AltAssets.
- Pease, R. (2000) *Private Equity Funds-of-funds—State of the Market*. Research Report. Wellesley, MA, Asset Alternatives Inc.
- Peng, L. (2001) Building a venture capital index. Working Paper No. 00-51. New Haven, CT, Yale ICF. <http://icf.som.yale.edu/>
- Peninon, D. (2003) *The GP–LP Relationship: At the Heart of Private Equity*. London, AltAssets.
- Pfeffer, M. (2001) *Blurring the Lines between Private Equity and Venture Capital: What Does the Future Hold?* Sacramento, CA, Institute for Fiduciary Education.
- Pfeiffer, E. (2002) Discount daze. *Red Herring*, **February**.
- Piper Jaffray Private Capital (2003) *Alternative Assets—Private Equity Fund-of-funds*. Special Report. Minneapolis, MO, Piper Jaffray Private Capital.
- Private Equity Online (2004) *VCs Are Not Nice People*: <http://www.privateequityonline.com/Newsletter/default.asp?NewsletterID=133>
- Probitas Partners (2003) *Foreign Exchange Prudence* New York, Private Equity Central; [http://www.probitaspartners.com/news/news\\_pecentral1071803.html](http://www.probitaspartners.com/news/news_pecentral1071803.html)
- Prowse, S.D. (1998) *The Economics of the Private Equity Market*. Economic Review. Dallas, TX, Federal Reserve Bank of Dallas.
- Quigley, J. & Woodward, S. (2003) An index for venture capital. Working Paper E03-333, Economics Department, University of California, Berkeley, CA.
- Radcliffe, R.C. (1994) *Investment: Concept, Analysis, Strategy*. New York, Harper Collins College Publishers.
- Raschle, B.E. (2000) Capturing returns: is private equity the solution? Centre for Investor Education, Conference Paper “Major Market Players”: <http://www.adveq.com/index.cfm?page=37&news=25>
- Raschle, B.E. (2002) *Europe—An Overview*. Zurich, Adveq Management.
- Raschle, B.E. & Ender, R. (2004) *Absolute Returns or Private Equity Asset Allocation?* Zurich, Adveq Management.



- Raschle, B.E. & Jaeggi, A. (2004) *The Quality of the Fund Manager is Crucial in Private Equity Investments*. Zurich, Adveq Management.
- Rating Capital Partners (2002) Fiduciary ratings—measuring trustworthiness in the investment management industry. Wiesbaden, RCP & Partners SA, presentation; [www.rcp-partners.de](http://www.rcp-partners.de)
- Rattner, S. *et al.* (2001) *GP Valuations: Are They Realistic?* Sacramento, CA, Institute for Fiduciary Education.
- Real Deals (2004a) Viewpoint: interview with Javier Echarri of EVCA. *Real Deals*, **8 April**, 24–25; <http://www.realdeals.eu.com>
- Real Deals (2004b) Mowbray launches first ever European early-stage venture fund-of-funds. *Real Deals*, **6 May**, 4; <http://www.realdeals.eu.com>
- Reyes, J. (2004) Funds-of-funds are here to stay. *European Venture Capital Journal*, **February**.
- Richardson, J. (2002) The next 25 years: private equity investing. [www.benefitscanada.com](http://www.benefitscanada.com).
- Robbie, K., Wright, M. & Chiplin, B. (1997) The monitoring of venture capital firms. *Entrepreneurship Theory and Practice*, **21**(4), 9–28.
- Rouvinez, C. (2003a) Asset class: how volatile is private equity? *Private Equity International*, **June**.
- Rouvinez, C. (2003b) Private equity and risk—looking at diversified portfolios. RiskInvest 2003, London, 27 and 28 October 2003.
- Rouvinez, C. (2004) Benchmarking: private against private. *Private Equity International*, October.
- Sachar, R. & Jinnah, J. (2001) *Next Generation Managers: The Prospects for First Time Private Equity Funds in Europe*. London, Almeida Capital Ltd; <http://www.almeidacapit.com/press/innews120la.htm>
- Sao-Wei Lee, A. (2003) *Private Equity Secondary Funds and their Competitive Strategies*. Fontainebleau, INSEAD.
- Scardino, J. (2004) Past performance a guide to likely future performance in private equity. *Private Equity Monitor*. Redhell, UK, Initiative Europe Ltd.
- Schaechterle, S. (2000) *Taking Away the Disadvantages*. Baar-Zug, Switzerland, Partners Group.
- Schäli, S. Frei, A. & Studer, M. (2002) Top Quartile als umstrittener Benchmark. *Neue Zürcher Zeitung*, **6 November** (No. 132), 29–30.
- Schwartzman, T.J. (2002) Alternative and liquid alternative assets—structuring and oversight. Presentation to Investment Management Institute's Endowment and Foundation Forum. Atlanta, GA, Hewitt Investment Group; <http://www.hewittinvest.com/pdf/IMIAAlternative%20Assets012002.pdf>
- Scott, A. (2003) *Changing Nature of Pension Investments*. Staffordshire, UK, PSCA International Ltd; [http://www.publicservice.co.uk/pdf/finance/winter2003/F1\\_Alex\\_Scott\\_ATL88.pdf](http://www.publicservice.co.uk/pdf/finance/winter2003/F1_Alex_Scott_ATL88.pdf)
- SECA-News (2003) Spotlight on Christophe de Dardel. *Swiss Private Equity & Corporate Finance Association Newsletter*, **15** (June).
- Sharpe, W. (1964) Capital asset prices: a theory of market equilibrium under conditions of risk. *Journal of Finance*, **19** (3, September), 425–442.
- Shearburn, J. & Griffiths, B. (2002a) Back to basics on private equity. *Pension Week* (in association with Goldman Sachs), April; [http://www.altassets.com/pdfs/pensions\\_Week\\_FINAL\\_Goldman.pdf](http://www.altassets.com/pdfs/pensions_Week_FINAL_Goldman.pdf)
- Shearburn, J. & Griffiths, B. (2002b) Private equity building blocks. *Pension Week* (in association with Goldman Sachs), April; [http://www.altassets.com/pdfs/pensions\\_Week\\_FINAL\\_Goldman.pdf](http://www.altassets.com/pdfs/pensions_Week_FINAL_Goldman.pdf)
- Shearburn, J., Griffiths, B. & Culhane, S. (2002) The nuts and bolts of private equity. *Pension Week* (in association with Goldman Sachs), April; [http://www.altassets.com/pdfs/Pensions\\_Week\\_FINAL\\_Goldman.pdf](http://www.altassets.com/pdfs/Pensions_Week_FINAL_Goldman.pdf)
- Siegel, J. (1999) The shrinking equity premium. *Journal of Portfolio Management*, **Fall**.
- Simons, K. (2000) The use of value at risk by institutional investors. *New England Economic Review*, **November/December**.
- Smart, C. (2002) *The Ageing of Venture Capital*. London, IDGVE; <http://idgve.com>
- Smith, M.D. (2000) Private equity funds-of-funds: getting what you pay for. Presentation at Asset Alternatives' Fund-of-Funds Summit, 2000. Atlanta, GA, Hewitt Investment Group; <http://www.hewittinvest.com/pdf/AssetAlternativesFoFSummit10122000.pdf>
- Smith, M.D. (2001) Venture capital: a look back and a look forward. Presentation at Fabozzi/IMN's Sixth Annual West Coast Endowment & Foundation Summit. Atlanta, GA, Hewitt Investment Group; [http://www.hewittinvest.com/pdf/venture\\_capital.pdf](http://www.hewittinvest.com/pdf/venture_capital.pdf)
- Smith, T. (1996) *Accounting for Growth—Stripping the Camouflage from Company Accounts*, 2nd edn. London, Arrow.

- Söhnholz, D. (2001) *Single Investor Private Equity Fund of Funds: Why Compromise?* 0000, FERI Private Equity GmbH, AltAssets.
- Söhnholz, D. (2002) Private equity fundrating: increasing the transparency of fund selection by using an "objective" approach. Paris, Super Investor Conference.
- Sood, V. (2003) Investment strategies in private equity. *Journal of Private Equity*, **Summer**.
- Sormani, A. (2003a) Back to square one: asset allocation. *European Venture Capital Journal*, London, **May**.
- Sormani, A. (2003b) Fund-of-funds: a bubble burst? *European Venture Capital Journal*, **September**.
- Sormani, A. (2004a) Securitisation: still early days. *European Venture Capital Journal*, **February**.
- Sormani, A. (2004b) VCTs: Living in the shadow of share price. *European Venture Capital Journal*, **May**.
- Sormani, A. (2004c) When does a fund raising go stale? *European Venture Capital Journal*, London, **May**.
- Sortino, F.A. (2004) Upside potential ratio. Menlo Park, CA, Pension Research Institute; <http://www.sortino.com/htm/upside%20potential.htm>
- Statman, M. (2002) *How Much Diversification is Enough?* Leavey School of Business, Santa Clara University.
- Steers, H. (2002) *Special Rules of the Game*. 000, Frank Russel Company, AltAssets.
- Stein, T. (2003) Exposed! *Red Herring*, 23 January; <http://www.redherring.com>
- Surowiecki, J. (2004) *The Wisdom of Crowds*. New York, Doubleday.
- Sweeney, G. *et al.* (2001a) *Private Equity Sub-asset Allocation—Part One: The Sub-asset Classes*. San Francisco, CA, WR Hambrecht Asset Management Group.
- Sweeney, G. *et al.* (2001b) *Private Equity Sub-asset Allocation—Part Two: Market Timing*. San Francisco, CA, WR Hambrecht Asset Management Group.
- Sweeney, G. *et al.* (2001c) *Private Equity Sub-asset Allocation—Part Three: Portfolio Construction*. San Francisco, CA, WR Hambrecht Asset Management Group, October.
- Swensen, D.F. (2000) *Pioneering Portfolio Management—An Unconventional Approach to Institutional Investment*. New York, Simon & Schuster.
- Takahashi, D. & Alexander, S. (2001) *Illiquid Alternative Asset Fund Modelling*. New Haven, CT, Yale University Investments Office.
- Tegeler, D. & Caplice, K. (2002) *Secondary Considerations: An Introduction to Secondary Funds*. Boston, MA, Testa, Hurwitz & Thibault.
- Thalmann, O. & Weinwurm, U. (2002) Public equity or private equity? Paper prepared for doctorate seminar in corporate finance, University of St. Gallen.
- The Economist* (2004a) Why does it take firms so long to produce their annual accounts? (May).
- The Economist* (2004b) Once burnt, still hopeful (November).
- The Economist* (2005) *Size matters—buy-outs are all the rage*. 29 January—4 February.
- The PEO Column* (2004) One in four. [privateequityonline.com](http://privateequityonline.com).
- Thompson, D.B. (1999) *Are There Too Many Private Equity Funds? Survival of the Fittest?* Sacramento, CA, Institute of Fiduciary Education.
- Tierney, J.F. & Folkerts-Landau, D. (2001) *Structured Private Equity—An Old Market Becomes an Emerging Asset Class*. Frankfurt, Deutsche Bank Global Markets Research.
- Timsit, T. (2003) European buyouts: a virtuous asset class in a worried world. *Funds Europe*, **March**; <http://www.funds-europe.com>
- Tobin, J. (1974) What is permanent endowment income? *American Economic Review*, **64**(2), 427–432.
- Troche, C.J. (2003) Development of a rating instrument for private equity funds. MBA Management Project Report, NIMBAS Graduate School of Management; <http://www.nimbass.com>
- van der Heijden, K. (1996) *Scenarios—The Art of Strategic Conversation*. Chichester, Wiley.
- van Putten, A. & MacMillan, I. (2004) Making real options really work. *Harvard Business Review*, **December**, 134–142.
- VCH Equity Group (2003) Investitionsverhalten eines PE Fund-of-Funds in Wirtschaftszyklen. Presentation to Forum Alternative Investments Conference.
- Venture Economics (1988) *Research Report on Venture Capital Performance*. New York, Venture Economics Inc.
- von Braun, E. (2000) Selektion und Strukturierung von Private Equity Fonds-Portfolios. Munich, IIR Private Equity & Venture Capital Conference.
- von Haacke, B. (2002) Rentable Pleite. *Wirtschaftwoche*, **44**.

- Walter, I. (2003) *Strategies in Banking and Financial Service Firms: A Survey*. New York University, New York: <http://www.stern.nyu.edu/salomon/financialinstitutions/S-FI-03-23.pdf>
- Waters, R. (2005) The biggest gains are concentrated in a handful of funds. *Financial Times*, London, February 16.
- Weaver, R.N. (2003) *Clawbacks and Returns—What's the Right Hurdle Rate? What's the Right Preferred Return?* Sacramento, CA, Institute for Fiduciary Education.
- Webb, A. (2001) Credit merging where credit merging is due. *Metal Bulletin* (reproduced from [www.fow.com](http://www.fow.com)), **January**.
- Weidig, T. (2002a) *Towards a Risk Model for Venture Capital Funds: Performance and Liquidity Forecasting*. Luxembourg, European Investment Fund; [http://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=336052](http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=336052)
- Weidig, T. (2002b) *Risk Model for Venture Capital Funds*. Luxembourg, European Investment Fund; [http://papers.ssrn.com/sol3/cf\\_dev/AbsByAuth.cfm?per\\_id=336052](http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=336052)
- Weidig, T. & Mathonet, P.Y. (2004) *The Risk Profiles of Private Equity*. Brussels, EVCA.
- White, M.C. (1999) *Business Valuation Techniques and Negotiations*. Menlo Park, CA, White & Lee LLP.
- Wiesner, S. *et al.* (2002) *LBO Distributions-in-Kind*. Special Situations Research. Woodland Hills, CA, Zuma Capital Partners LLC; [www.zumacp.com](http://www.zumacp.com)
- Wietlisbach, U. (2002) *Private Equity Fund-of-fund Management: A Strategic Approach*. London, AltAssets.
- Winograd, B. (2002) *Hamlet and Modern Portfolio Theory*. Newark, NJ, Prudential Investment Management.
- Wintner, B.A. (2001) *How Many Hedge Funds are Needed to Create a Diversified Fund-of-Funds?* New York, Asset Alliance Corporation.
- Zimmermann, H. *et al.* (2004) The risk and return of publicly traded private equity. Working Paper No. 6/04. WWZ/Department of Finance, University of Basel.
- Zimmermann, H., Bühler, A. & Scherer, H. (1997) *Diversifikationseigenschaften von Risikokapitalanlagen*. Zürich, University of Sankt Gallen.

## Abbreviations

AFIC	Association Française des Investisseurs en Capital
AIMA	Alternative Investment Management Association
AIMR	Association for Investment Management and Research (new CFA Institute)
BVCA	British Venture Capital Association
CAPM	Capital asset pricing model
CFO	Collateralised fund obligation
DCF	Discounted cash flow
DPI	Distributions to paid-in capital
EIF	European Investment Fund
EU	European Union
EVCA	European Venture Capital and Private Equity Association
FOIA	Freedom of Information Act
GEM	Grading-based economic model
GP	General partner
IAS	International accounting standards
IASB	International Accounting Standards Board
IASC	International Accounting Standards Committee
ICBI	International Centre for Business Information
ICF	International Center for Finance
IFRS	International financial reporting standards
IIB	Institute of International Bankers
ILPA	Institutional Limited Partners Association

IRR	Internal rate of return
ISDA	International Swaps and Derivatives Association
LP	Limited partner
LBO	Leverage buyout
NAPF	National Association of Pension Funds
NAV	Net asset value
NBER	National Bureau of Economic Research
NPI	Net paid-in
NPV	Net present value
NVCA	National Venture Capital Association
PE	Private equity
PEF	Private equity fund
POC	Performance, operational, and compliance grading
PTPE	Publicly traded private equity
RERI	Real Estate Research Institute
RVPI	Residual value to paid-in capital
TVPI	Total value to paid-in capital
VaR	Value-at-risk
VC	Venture capital

# Index

- 3Com 19
- 3i 257–8
- ABP 132
- absolute benchmarks 169–70, 180
  - see also* benchmarking
- accounting rule-based valuations 65, 160–3, 236, 248–52, 301–2
- actions, monitoring 285–6, 289–95, 323
- active fund management 64–5, 89, 165–8, 298–9
- actuarial appraisals 242
- ad hoc* queries, monitoring 281
- administration issues 29–31, 214–16, 299
- adverse selection 27
- AFIC 30, 154, 279–80, 302
- agency problems 162, 271–2
- agreements, limited partnerships 27–38, 128, 162, 200–1, 212–18, 273–86, 289–95, 308, 320–1
- AIMR *see* Association for Investment Management and Research
- Akerlof, George 154
- Albert, Kevin 89
- alpha-seeking asset classes 145
- Amram, Martha 321
- angel capital, concepts 9–10
- Apple 19
- appraisal errors 76–7
- appraised asset classes, concepts 159–62, 165–6
- arbitrage 160–1, 279
- Aronoff, David 20
- asset allocations 9–10, 81–94, 236, 298–9
- Asset Alternatives 16
- asset classes
  - concepts 6, 9–10, 48–51, 131, 145, 159–60, 165–71, 248–9
  - definition 9
- asset liability management 56
- asset managers 47, 176–8
- Association for Investment Management and Research (AIMR) 166–7
- asymmetric information 31, 137, 154, 231, 281
- auditors 153, 211, 212–13
- bad-leaver clauses 36–7, 213–14
- Bailey criteria, benchmarking 165–6
- balance needs, limited partnerships 38–40, 223–4, 271
- banks 11–12, 47, 50–1, 54–5, 173–4, 327
  - see also* institutional investors
- Baring Private Equity Partners (BPEP) 136–7
- Barnes, Ian 83
- Basel Accord (Basel II) 4, 65, 73–80, 173, 298, 313
- behavioural portfolio theory 88–9
- benchmarking 10, 41, 165–71, 174–92, 197, 201, 219–31, 233–52, 260, 300–7
  - absolute benchmarks 169–70, 180
  - Bailey criteria 165–6
  - concepts 165–71, 174–92, 197, 238–52, 260, 300–7
  - peer groups 71–2, 165–71, 174–6, 180–92, 201–2, 219–31, 233–52
  - portfolio of funds 170–1
  - problems 165–6, 197
  - relative benchmarks 167–9, 174–5, 180–92, 231, 233–52
  - secondary transactions 300–7
  - statistics 10, 41, 260
  - types 167–71
- betas 65–7, 253–65
  - bottom-up betas 261–4
  - concepts 65–7, 253–65
  - estimates 257–64
  - modified data 262–4
- binomial trees 325
- black boxes 5
- “Black Monday” 297

- Black-Scholes model 254, 321–2  
 Blaydon, Collin 316  
 “blob” scores 220–1  
 Bodtker, Christopher 231  
 bonds 41–6, 132–3, 254, 304–6  
 boom-and-bust cycles 6, 22–6  
 bottom-up approach, portfolio construction 81, 83–8, 137–8  
 bottom-up betas 261–4  
 bottom-up valuations 4, 137–8, 154–63, 173, 188–92, 233, 306–7  
 BPEP *see* Baring Private Equity Partners  
 brand names 18–21  
 break-even IRR 66–7, 230  
 break-up assumptions, NAVs 158  
 British Venture Capital Association (BVCA) 30, 73, 154, 279–80, 302, 314  
 BTU program, Germany 38–9  
 budgeted management fees 32  
 budgets, uncertainty budgets 72, 200, 322–3  
 business models 44–5, 162, 328–9  
     buyouts 45  
     venture capital 44–5, 162  
 buy-backs 132  
 buyers, secondary transactions 299–310  
 buyouts 10–11, 13–14, 39–46, 67, 89, 91, 121–2, 156, 179, 193–4, 207, 216, 262–4, 275, 314–17, 324  
     business models 44  
     concepts 39–46, 67, 121–2, 156, 193–4, 216, 262–4, 275, 314–17, 324  
     deal structuring 45  
     general managers 45  
     returns 41–3, 45, 121–2, 262–4  
     social issues 314–17  
     valuations 44, 153  
     venture-capital contrasts 41–6, 275, 324  
 BVCA *see* British Venture Capital Association  
  
 CAC 40 265  
 CAD II *see* Capital Adequacy Directive  
 call options 321–2  
 CalPERS 132, 178–9, 323  
 Cambrian explosion 71  
 Cambridge Associates 166  
 capital  
     CAPM 253–65  
         constraints 155, 307  
         gains 14–15, 27, 129, 130, 310  
         opportunity costs 265–7  
 Capital Adequacy Directive (CAD II) 4, 73–80  
 capital asset pricing model (CAPM) 253–65  
     alternatives 264–7  
     assumptions 253  
     concepts 253–65  
     formula 253  
     CAPM *see* capital asset pricing model  
     captive funds 226, 313  
     Carlyle Group 3  
     Caron, Xavier 224  
     carried interest 12, 32–3, 40, 50–1, 54, 66–7, 127–30, 199, 213–14, 230, 292–5  
     Carroll, Lewis 10  
     case studies 95–113, 287–95  
     cash flows 14, 43–4, 52–6, 61, 63–4, 76, 115, 117–49, 154–63, 174–6, 211–12, 233–52, 292–5, 304–7, 319–22  
         components 133–5  
         discount rates 63–4, 241, 253–67, 304–7, 319–22  
         estimates 135–8, 144–7  
         forecasts 135, 138–42, 144–5, 240–2, 276  
         IRR 12–14, 31, 40–2, 61, 66–7, 79–80, 97–101, 116–44, 158–9, 166–9, 181–92, 230, 237, 238–52, 262–4, 277, 288–9  
         libraries 138–9, 233–4, 304–6  
         projections 14, 43–4, 61, 63–4, 76, 115, 117–49, 154–63, 174–6, 233–52, 304–7, 319–22, 328  
         scenarios 133–5, 142–4, 149, 233–7, 239  
         valuations 14, 43–4, 63–4, 76, 154–63, 174–6, 233–52, 304–7, 319–22  
     Cathiard, Florence 329  
     CFOs *see* collateralised fund obligations  
     Chamberlain, Margaret 73  
     Cisco Systems 19  
     claw-back provisions 37, 213–14  
     closing stage, funds-of-funds 54  
     co-investments 48–51, 64–72, 188, 209, 214, 231, 276, 285–6, 290–1, 313–14  
     COB 213, 277  
     collateralised fund obligations (CFOs) 56, 155–6, 309–10  
     commitment management 60–72, 116, 117–22, 130–8, 148–9, 154–6, 170–1, 174–5, 201–2, 210–11, 277, 291–5, 300–4  
     commitment-weighted benchmarks 171  
     communication needs 30–2, 133, 328  
     competitive advantage 195, 227  
     compliance issues 29–31, 75, 194–5, 212–13, 229–30, 273–86  
     confidentiality needs 282, 308  
     conflicts of interest, limited partnerships 3–4, 15, 29–31, 34, 38–40, 177–8, 214, 227, 271  
     contributions, general partners 34–5, 48, 54, 227  
     control framework 144–5, 272–3  
         *see also* monitoring  
         liquidity management 144–5  
     convertibles 41  
     core-satellite portfolios, risk–return management 88–94, 317  
     cornerstoning approaches 317  
     corporate governance 29–31, 214, 230, 293–4, 309, 320

- correlations 81–3, 130, 264
- cost averaging 90–2
- costs 6, 11–12, 28–9, 51–2, 96–7, 195, 200, 229–30, 253, 272–3, 281, 320
  - due diligence 195, 200, 320
  - funds-of-funds 51–2
  - monitoring 272–3, 281
  - opportunity costs 76, 119–22, 265–7
  - scoring dimensions 229–30
  - transaction costs 11–12, 253
- Cover, Harry 95–111, 287–93
- credit ratings 5–6, 153, 173–4, 180–1, 189, 236, 241–2
- credit risk 73, 77–80, 173–4, 180–1, 189, 241–2, 254
- Crichton, Michael 319
- crises 297
- currencies *see* exchange rates
- customer services, ratings 177–8
  
- Darwin, Charles 70
- data 79–80, 81–2, 96–7, 107, 133–4, 138, 139–41, 157, 165–70, 176, 180–3, 197, 202–18, 221, 233–6, 240–2, 253–4, 262–5, 304–7
  - see also* information
  - CAPM 253–4
  - portfolio theory 81–2, 97, 262–4
  - VaR calculations 79–80, 241
- databases 97, 104, 139–42, 166–70, 176, 182, 197, 240–2, 266, 304–7
- DAX 265
- DCF *see* discounted cash flow model
- de Dardel, Christophe 271
- “deadly sins” 327–8
- deal sourcing 197–202, 208–9, 227, 282, 293–4
- deal-by-deal calculations, carried interest 32–3
- debt finance 41–6, 65, 77–8, 132–3, 173–4
- decision bias 188
- decision making
  - due diligence 195, 200–18, 219, 271–2, 276, 307–8, 323, 328
  - exit decisions 25–6, 36–8, 137, 161–2, 175, 210, 226, 229, 286, 290–5
  - factors 5–7, 10, 16–17, 25–6, 50–1, 68–72, 138–42, 173–4, 180, 182–92, 195, 201–2, 219–31, 233–52, 322–5, 327–9
  - fund-manager selection processes 201–2
  - real options 322–5, 327–8
  - structured approaches 327–9
- default events *see* credit risk
- defaulters, limited partnerships 124, 158, 202, 302, 321
- Delgado-Moreira, Juan 115, 137
- Delphi method, scenarios 142
- differentiation 25–6, 89
- direct co-investments, funds-of-funds 48–51
- disclosures 29–31, 277–86
  - see also* transparency. . .
- discount rates
  - see also* opportunity costs
  - cash flows 63–4, 241, 253–67, 304–7, 319–22
  - private equity funds 156, 160, 253–67, 299–307
  - publicly-quoted private equity 131–2
  - secondary transactions 299–307
  - venture capital 156, 160, 253–67
- discounted cash flow model (DCF) 254, 319–20, 321–3
- diseconomies of scale 93
- distribution to paid-in ratio (DPI) 167, 170
- distributions
  - distributions-in-kind 128–30
  - private equity funds 11–12, 13–14, 31, 37–9, 54–6, 115–49, 167, 211–12, 292–5, 306–7
  - waterfalls 37–9, 212, 306–7
- diversification
  - captive funds 313
  - concepts 59–72, 86, 90–4, 95–113, 121–2, 145, 188, 193, 207–8, 253–67, 299–300
  - funds-of-funds 47–56, 145–7
  - management issues 60–72, 90–4, 145
  - naive diversification 71–2, 83, 90–3
  - optimal allocations 71–2, 94, 95–113
  - over-commitment strategies 121–2, 130–3, 148–9
  - over-diversification dangers 59, 93–4, 102–13, 145, 188, 193, 310, 327–8
  - secondary transactions 299–300
- divestment periods 11–12
- dividends 11
- documents, private equity funds 27–38, 214–16
- DPI *see* distribution to paid-in ratio
- drawdowns 11–14, 52–6, 109–13, 116–49, 154–5, 186–92, 212, 214, 240–2, 300, 306–7
- due diligence 38, 44, 48–51, 63, 96–7, 178, 180, 194–8, 200–18, 219, 271–2, 276, 307–8, 320, 323, 328
  - concepts 178, 180, 194–7, 200–18, 219, 271–2, 276, 307–8, 320, 323, 328
  - costs 195, 200, 320
  - decision making 195, 200–2, 219, 271–2, 276, 323, 328
  - definition 194
  - fund-manager selection processes 200–18
  - limitations 195–6
  - processes 195–7, 200–1, 202–18
  - questionnaires 196–7, 202–18
  - reasons 194–5, 200–1, 219
  - risk 197
  - secondary transactions 307–8
- EBITDA 201
- economic cycles 6, 22–6, 174



- economic values 65, 73, 79, 149, 157–63, 174–6, 189–90, 200, 233–52
- ecosystems 69–72, 319
- efficient frontiers 116
- efficient markets 10, 68, 167–8, 233
- emerging markets 126–8
- endowments 11–12, 327–9  
*see also* institutional investors  
 performance issues 327–8
- ENF *see* equivalent number of funds
- entry barriers 6, 19–21, 25–6, 104–13, 116
- equity finance  
*see also* private equity...  
 characteristics 78, 132–3
- equity risk premiums 253–66
- equivalent number of funds (ENF) 87
- established businesses, buyouts 41–6
- estimates  
 betas 257–64  
 cash flows 135–8, 144–7  
 definition 135
- ethical considerations 213, 314–17
- EURIBOR 125
- Europe 7, 30, 54, 86–8, 125–8, 136, 139–45, 154, 169–70, 175–6, 182–3, 202–18, 219–31, 262–4, 265–6, 275, 287–95, 302, 314  
*see also individual countries*
- European Investment Fund 7, 54
- European Venture Capital and Private Equity Association (EVCA) 30, 136, 154, 202–10, 216–18, 226, 279–80, 294, 302, 314
- evaluations  
 control systems 272–3, 282–5  
 fund-manager selection processes 199–202
- EVCA *see* European Venture Capital and Private Equity Association
- event risk 282
- evolution 10, 70–2, 86, 319–20
- exchange rates 77–80, 124–8, 210–11
- exit decisions 25–6, 36–8, 137, 161–2, 175, 210, 226, 229, 286, 290–5
- expansion capital, definition 216
- expected final returns  
 concepts 98–113, 116, 130, 239–52  
 formula 111
- expected performance grades  
 concepts 181–8, 195, 219–31, 236, 239–52, 282–5, 317, 323–4  
 definition 183
- expected utility, concepts 113
- expenses, fund managers 30–2, 51, 155, 306–7
- experience, teams 198–9, 204–7, 210–11, 221–4
- experimentations, uncertainty issues 72
- expert systems 200, 220
- extended peer groups 169
- external ratings 173–4, 176–8, 236
- failures 18, 25–6, 61, 178, 243, 282–5, 327–8
- fair-value accounting 4, 14, 63, 153–63, 189–90, 216, 233–6, 248–52, 301–3
- “family, friends and fools” 9, 23–4
- fashions 22–3, 59, 327
- fees, fund managers 11–15, 28, 30–2, 40, 47–8, 51–5, 66–7, 116, 130, 134–5, 145–7, 155, 188, 199, 213–14, 225–6, 230, 277, 286, 292–5, 306–7
- Feri 176, 177
- fiduciary ratings 176–7, 180
- final IRRs 184–92, 237, 245–52, 262–4, 299–300
- Financial Services Authority (FSA) 213, 277
- “first quartile fund managers” 6, 15–19, 48, 54, 63–4, 84–8, 195, 237–8, 242–52, 282, 328
- first-time funds 16–18, 21–2, 25–6, 105, 200–2, 222–3, 315–16, 324–5  
 real options 324–5  
 successes 16–18, 25–6, 200  
 types 21
- first-time teams 21–2, 25–6, 200–2, 222–3
- Fitch 153
- fixed-income structures, collateralised fund obligations 56
- Flag Venture Management 20, 29, 39–40, 161
- “flags”, trade-off assessments 188
- FOIA *see* Freedom of Information Acts
- follow-on funds 15, 16–21, 106, 123–4, 274–6, 286, 306–7, 320–2  
 funding sources 123–4, 320–1  
 real options 320–2, 324–5  
 successes 16–21
- for-cause removals, general partners 36–7
- forecasts  
 cash flows 135, 138–42, 144–5, 240–2, 276  
 definition 135
- foreign exchange *see* exchange rates
- France 213, 265, 277
- Freedom of Information Acts 202, 278
- FSA *see* Financial Services Authority
- FTSE  
 100 265  
 All Share 17
- fund managers  
*see also* general partners; private equity funds;  
 teams  
 buyouts/venture capital 45–6  
 carried interest 12, 32–3, 40, 50–1, 54, 66–7, 127–30, 199, 213–14, 230, 292–5  
 concepts 3–4, 6, 10–16, 19–21, 23–6, 116, 271–86, 307–10, 327–9  
 conflicts of interest 3–4, 15, 29–31, 34, 38–40, 177–8, 214, 227, 271  
 contributions 34–5, 48, 54, 227  
 due-diligence questionnaires 200–18  
 expenses 30–2, 51, 155, 306–7

- fees 11–15, 28, 30–2, 40, 47–8, 51–5, 66–7, 116, 130, 134–5, 145–7, 155, 188, 199, 213–14, 225–6, 230, 277, 286, 292–5, 306–7
- “first quartile fund managers” 6, 15–19, 48, 54, 63–4, 84–8, 195, 237–8, 242–52, 282, 328
- incentives 12, 14–15, 32–3, 38–9, 48–51, 127–8, 225–6, 271–2, 284–5
- intermediation practices 3–4, 6, 10–15, 27–40
- life cycle 24–6, 175, 180, 186–8, 237–8, 286
- limited partnerships 3–4, 6, 10–15, 23–38, 47–8, 116, 127, 137–8, 197, 271–86, 320–1
- monitoring 7, 38, 48–51, 63–72, 75, 87–8, 135, 139–40, 144–5, 168, 193, 271–86, 287–95, 323
- numbers 92–4
- performance issues 6, 15–17, 19–21, 25–6, 48, 54, 59–72, 83–8, 130, 153–63, 174–92, 193–218, 233–52, 265–6, 287–95, 327–9
- quality issues 4, 6, 15–16, 18–21, 26, 51, 54, 59–61, 83–8, 92–4, 135, 155, 174, 177–8, 193–218, 219–31, 234–6, 284–5, 303–4, 309–10, 327–9
- relationships 20–1, 23–6, 27–9, 30–2, 36–7, 48–51, 198–218, 284–6, 320–1
- reputations 15–16, 18–19, 196, 226, 227, 230, 309
- scoring concepts 174, 183–92, 219–31, 234–6, 282–5
- secondary transactions 307–10
- selection issues 59–72, 83–8, 92–4, 107–13, 174–6, 193–218, 234–6, 243–52, 271–2, 275–6, 327–9
- successes 6, 15–21, 25–6, 194, 243–52, 271–2, 314, 327–8
- termination clauses 36–8, 286, 289–95
- top funds 6, 15–19, 25–6, 48, 54, 63–4, 84–8, 195, 222, 236–8, 242–52, 282, 313–17, 327–9
- “watch lists” 275, 288–9
- wealth 14–15, 34–5
- wish-list requirements 197–202, 236
- fund-as-a-whole calculations, carried interest 32–3
- funding, types 27–9, 53–5, 123–4, 130, 211–12
- funds-of-funds 3, 6, 11–12, 47–56, 61, 74–5, 131–2, 145–7, 239–40, 272–3, 327
- see also* institutional investors
- benefits 49, 54
- concepts 47–56, 74–5, 131–2, 239–40
- costs 51–2
- diversification 47–56, 145–7
- funding 53–5
- historical background 47
- listed funds-of-funds 131–2
- payout schedules 55–6
- resources 49–51
- selection skills 50
- structural issues 47–8
- value added 48–51
- future cash flows 14, 43–4, 61, 63–4, 76, 115, 117–49, 154–63, 174–6, 233–52, 304–7, 319–22
- see also* cash flows
- fuzzy figures 5, 197, 281
- GEM *see* grading-based economic model
- general partners
- see also* fund managers; limited partnerships
- buyouts/venture capital 45–6
- concepts 10–12, 14–15, 18–21, 23–6, 27–40, 45–6, 47–8, 52–5, 116, 127–30, 157–63, 180, 271–86, 307–10
- contributions 34–5, 48, 54, 227
- incentives 12, 14–15, 32–3, 38–9, 48–51, 127–8, 225–6, 271–2
- limited partnerships 3–4, 6, 10–15, 23–38, 47–8, 116, 127, 137–8, 271–86, 320–1
- lock-up agreements 128, 162, 307
- monitoring 7, 38, 48–51, 63–72, 75, 87–8, 135, 139–40, 144–5, 168, 193, 271–86, 287–95, 323
- numbers 92–4
- termination clauses 36–8, 286, 289–95
- wealth 14–15, 34–5
- geographical diversification 93–4, 193–4, 207–8, 223, 275
- Germany 38–9, 54, 265
- glossary 331–9
- Google 19
- governments 314–17
- GPs *see* general partners
- grading approach 5–6, 7, 63–4, 142–4, 153, 173–92, 219–31, 233–52, 282–5, 302–7, 317, 323, 328–9
- assumptions 189, 238–9, 242
- expected performance grades 181–8, 195, 219–31, 236, 239–52, 282–5, 317, 323–4
- formalisation 180–1
- private equity 5–6, 7, 63–4, 142–4, 153, 173–92, 219–31, 233–52, 282–5, 302–7, 317, 323, 328–9
- ratings contrast 181
- verification issues 189–90, 241–2
- grading-based economic model (GEM) 63, 189–90, 219, 233–52, 282–5, 302–7, 323, 328–9
- approach 233–7
- assumptions 238–9, 242
- concepts 233–52, 282–5, 302–7, 323, 328–9
- expected returns 239–52
- internal age adjustments 237–8, 245–52
- IRR projections 238–9
- verification issues 241–2

- Greece 310  
 Greenwood, John 230–1  
 Greylock Capital 20  
 groups *see* teams  
 Gschrei, Michael Jean 115  
 Gulf Wars 175  
 gut instincts 5, 133, 199, 328
- Haglund, Allan 287–91  
 Halligan, Hanse 222  
 Hamilton Lane 61  
 hands-on approaches 228  
 hard factors, decision making 5, 10  
 Hart, Reinhard 223  
 hedge funds 5, 77–8, 130–3, 239–40, 274–5  
 Heppner, Brad 229  
 herd instinct 327  
 Hicks Muse 125  
 Hirsch, Erik 61  
 historical data, uses 10, 304–7  
 “hockey stick” *see* J curve  
 hold-up problems 27  
 hurdle rates 29, 33–4, 39–40, 48, 127–8, 213–14, 230
- IASs *see* International Accounting Standards  
 IBM 19  
 idiosyncratic risk 104, 254–67  
 IFRS *see* International Financial Reporting Standards  
 illiquidity issues 3, 14, 49–56, 76, 98, 115–49, 155–6, 195, 248, 267, 272–4, 281, 297, 308–10, 328  
 impairment losses 251  
 implied risk premiums 256  
 in-house private equity investment programmes 3–4, 47, 50–5  
 independence issues, teams 226  
 independent risk management function, benefits 73–5  
 index trackers 67–8  
 industry sector experience, teams 223  
 informal private equity market 9  
 information 9, 10, 18, 26–7, 31, 68–9, 75–7, 79–82, 96–7, 106, 133–4, 137, 139–42, 157, 160–1, 165–70, 180–3, 202–18, 233–6, 253–4, 262–4, 276–86  
   aggregation function 75–7, 262–4  
   asymmetric information 31, 137, 154, 231, 281  
   due-diligence questionnaires 196–7, 202–18  
   informal private equity market 9  
   knowledge arbitrage 160–1  
   market values 75–7, 157, 234–6  
   monitoring 7, 38, 48–51, 63–72, 75, 87–8, 135, 139–40, 144–5, 168, 193, 271–86, 287–95, 323  
   overload problems 276–7  
   portfolio theory 81–2, 97, 262–4  
   VaR calculations 79–80, 241  
 initial public offerings (IPOs) 77, 91, 128, 140, 222, 229, 246, 255, 260, 298  
 innovations, private equity funds 5, 10, 14–15, 20, 22–6, 41–6, 70–1, 142, 153–63, 315–16, 322  
 insider trading 161  
 institutional investors  
   intermediation practices 3–4, 6, 9–15, 27–40  
   private equity 3–4, 6, 9–12, 18–21, 23–6, 50–1, 74–5, 197, 278–9, 327–9  
   types 11–12, 327–8  
 institutional quality, concepts 18–21, 23–4, 235–6  
 insurance companies 11–12, 47, 50–1, 54–5, 242  
   *see also* institutional investors  
 intangibles, assessments 200  
 intensity management, monitoring 285–6  
 interest payments 11  
 interest rates, market risk 77–80  
 interim IRRs 181–92, 239–52  
 intermediation practices  
   fund managers 10–15  
   institutional investors 3–4, 6, 9–15, 27–40  
 internal age adjustments 186–8, 237–8, 241–2, 245–52  
 internal grading systems  
   *see also* grading...  
   assumptions 190, 238–9, 242  
   concepts 178–92, 219–31, 233–52, 282–5, 302–7, 317, 323, 328–9  
   expected performance grades 181–8, 219–31, 236, 239–52, 282–5, 317, 323–4  
   formalisation 180–1  
   ratings contrast 181  
   verification issues 189–90, 241–2  
 internal rate of return (IRR) 12–14, 31, 40–2, 61, 66–7, 79–80, 97–101, 116–44, 158–9, 166–9, 181–92, 230, 237–52, 262–4, 277, 288–9, 294, 300, 303, 327  
   *see also* J curve  
   benchmarking 166–9, 181–92  
   break-even IRR 66–7, 230  
   concepts 12–14, 31, 40, 61, 97, 101, 158–9, 166–9, 181–92, 230, 237–52, 300  
   internal grading systems 181–92, 230, 237–52  
 internal risk ratings 78, 173–4  
 International Accounting Standards (IASs), IAS 39 14, 234–5, 248–52, 301–2  
 International Financial Reporting Standards (IFRS) 4, 63  
 International Swaps and Derivatives Association (ISDA) 173  
 Internet 19, 22, 93, 174  
 interviews 188

- investment periods 11–12  
investment processes 5, 7, 10–11, 59–72, 95–113,  
144–5, 177–8, 194–7, 313–17, 328–9  
concepts 59–72, 313–17, 328–9  
description 61–5  
key performance drivers 59–61, 63  
risk management 65–72  
investment programmes 52–5, 95–113, 144–5, 195,  
287–95, 313–17, 328–9  
investment strategies 130–3, 197–8, 207–10, 227–9,  
284–5, 313–17  
investment universe 18–22, 71–2, 131–2, 169,  
193–4, 219–21  
investors 3–4, 6, 10–12, 18–22, 23–6, 38, 44,  
48–51, 63, 96–7, 178, 180, 194–7, 231,  
271–86, 297–310, 313–17, 328–9  
*see also* institutional investors; limited  
partnerships  
due diligence 38, 44, 48–51, 63, 96–7, 178, 180,  
194–8, 200–18, 219, 271–2, 276, 307–8,  
320, 323, 328  
entry barriers 6, 19–21, 25–6, 104–13, 116  
monitoring obligations 271–86, 287–95  
recurrent investors 231  
secondary transactions 297–310  
types 11, 23–4, 308–10  
“invitation only” funds 299  
IPOs *see* initial public offerings  
IRR *see* internal rate of return  
ISDA *see* International Swaps and Derivatives  
Association  
Isroff, Brian D. 275
- J curve  
concepts 12–14, 50, 109–13, 174, 245–52, 277,  
299–300  
fair-value accounting 14, 245–52  
portfolios 12–14, 109–13, 174, 245–52, 299–300  
secondary transactions 299–300
- Japan 265  
J.P. Morgan 93  
junior notes, SPVs 156  
just-in-time funding 53, 130
- Kaufman, Henry 17  
Kehoe, Conor 16  
key performance drivers, investment processes  
59–61, 63  
key persons 35–6, 224–5  
Keynes, J.M. 49, 239  
KKR *see* Kohlberg Kravis Roberts & Co.  
knowledge arbitrage 160–1  
Kohlberg Kravis Roberts & Co. (KKR) 314–15  
KPMG 272  
kurtosis 82, 99, 112–13
- late-stage venture capital 178–9  
LBOs *see* leveraged buyouts  
learning curves 107–13  
leaver clauses 36–7, 213–14, 289–95  
legal requirements 10–11, 14, 27, 124, 194–5,  
200–1, 204, 212–13, 293, 308–10  
“lemons” 154–63, 174, 243, 299  
leptokurtosis 112–13  
Lerner, Josh 4  
leveraged betas 261–4  
leveraged buyouts  
*see also* buyouts  
concepts 41–6, 89, 156, 315  
libraries, cash flows 138–9, 233–4, 304–6  
limited liability 10–11  
limited partnerships  
*see also* investors; private equity funds  
actions 285–6, 289–95  
agreements 27–38, 128, 162, 200–1, 212–18,  
273–86, 289–95, 308, 320–1  
balance needs 38–40, 223–4, 271  
concepts 3–4, 6, 10–12, 14–15, 23–6, 27–40,  
47–8, 52–5, 116–28, 137–8, 157–63, 180,  
197, 271–86  
conflicts of interest 3–4, 15, 29–31, 34, 38–40,  
177–8, 214, 227, 271  
defaulters 124, 158, 202, 302, 321  
fund managers 3–4, 6, 10–15, 23–38, 47–8, 116,  
127, 137–8, 197, 271–86, 320–1  
illiquidity issues 3, 14, 115–49, 248, 267, 272–4,  
281, 297, 308–10, 328  
monitoring obligations 271–86  
over-commitment strategies 119–22, 130–3, 202  
powers 12, 23–6, 27–38, 127, 162, 271–86,  
287–95, 320–1  
secondary transactions 297–310  
structural issues 11–12, 23–6, 27–40, 47–8, 161,  
229–30, 284–5
- Lipper 176  
liquidity  
lines 123–4  
risk 149  
sources 123–4  
liquidity management 7, 49–56, 59–60, 63–72,  
115–49, 188, 195, 267, 276, 297–310, 328  
*see also* cash flows  
approaches 123–30  
concepts 115–49, 188, 195, 276  
control framework 144–5, 276  
exchange rates 124–8  
over-commitment strategies 119–22, 130–3,  
148–9  
problems 115–22, 188  
returns 116–44

- liquidity management (*Continued*)  
 secondary transactions 297–310  
 tests 148–9  
 Yale model 117–22, 233
- listed funds-of-funds 131–2  
*see also* publicly-quoted...
- lock-up agreements, general partners 128, 162, 307
- London Stock Exchange 125, 132
- Long, Gus 223
- long-term nature, private equity funds 50–1, 54–5,  
 75, 95–113, 115, 162, 175–6, 327–9
- losses 61, 193–4, 243, 251
- lower-quality funds, investment strategies 313–17
- LPs *see* limited partnerships
- LPX 50 260
- M&As *see* mergers and acquisitions
- McKinsey & Co. 16
- Mair, Hamish 229
- Malkiel, Burton 105
- mandators 52–5, 61–5, 115
- Manser, Chris 222, 224
- MAR *see* minimum acceptable return
- market dynamics, private equity funds 22–6
- market risk 77–80, 255–67
- market timing 91–2
- market values  
 concepts 73–80, 157–63, 250–2  
 definition 76, 250  
 private equity funds 73–80, 157–63, 234–6,  
 250–2
- marking to market 157, 162, 233–4
- marking to model 80, 162–3, 188–9, 233–4, 251–2
- Markowitz 81, 90–1
- Mathonet, Pierre-Yves 95
- maturing investments, funding sources 123–4
- maturity issues, private equity funds 11, 13–14, 31,  
 134–5, 145, 149, 155–6, 243–52, 254, 265–6,  
 300, 304
- mean 59–60, 107, 113, 170–1
- mean-variance framework 59–60, 102, 113
- median 170–1
- mergers and acquisitions (M&As) 140, 222, 298
- Merrill Lynch 89
- Meyer, Thomas 95
- mezzanine funds 41, 121–2, 179, 324
- minimum acceptable return (MAR), formula 111
- mixed approach, portfolio construction 85–8
- monitoring 7, 38, 48–51, 63–72, 75, 87–8, 135,  
 139–40, 144–5, 168, 193, 271–86, 287–95, 323  
*see also* reporting...  
 actions 285–6, 289–95, 323  
 approach 272–3  
 concepts 271–86, 287–95, 323  
 confidentiality conflicts 282  
 control systems 272–3  
 costs 272–3, 281  
 evaluations 272–3, 282–5  
 information-gathering processes 276–82  
 intensity management 285–6  
 objectives 273–6  
 specific monitoring 281–2  
 standard monitoring 279–81  
 style discipline 274–6  
 timelines 280–1  
 value-creation benefits 276
- Monte Carlo simulation 97–8, 137, 171, 240–2,  
 246, 306
- moral hazard 27, 271–2
- Morningstar 176
- motivation factors, teams 225–6, 284–5
- MSCI 258–60, 264
- multi-factor models, CAPM alternatives 264–6
- mutual funds 176–8, 274
- Nagtegaal, Toon 282
- naive diversification 71–2, 83, 90–3
- NASDAQ 140, 258–60
- natural selection 70
- NAVs *see* net asset values
- net asset values (NAVs) 13, 55, 131–2, 142, 149,  
 153–63, 167, 174–89, 254, 277, 285–6, 300–7,  
 310  
 concepts 153–63, 167, 174–89, 277, 285–6,  
 300–7  
 problems 154–63, 174–6, 187–9
- net present values (NPVs), future cash flows 14,  
 154–63, 174–6, 240–2, 246, 322
- Netherlands 132
- networks 208–10, 276
- new funds *see* first-time funds
- niche strategies, portfolio design 89, 235, 282
- normal distributions 82–3, 93–4, 103–13, 137–8
- NPVs *see* net present values
- numbers, fund managers 92–4
- on-going reports, monitoring 281
- operational experience, teams 222–3
- operational liquidity practices 123–30
- operational status grades 64, 282–5
- opportunity costs 76, 119–22, 265–7  
*see also* discount rates
- optimal allocations 71–2, 94, 95–113
- options, real options 72, 200, 235–6, 319–25, 327–8
- organised private equity market  
*see also* private equity  
 concepts 9–10
- outside activities, teams 226–7
- outsourcing 47, 49–51, 214
- over-commitment strategies 119–22, 130–3,  
 148–9, 202

- over-diversification dangers 59, 93–4, 102–13, 145, 188, 193, 310, 327–8
- overall fit, scoring dimensions 231, 284–5
- overdrafts 67
- overload problems, information 276–7
- overview 7
- pari passu* principle 40
- Partners Group 142
- passive fund management 67–8, 89, 165–8
- past performance 16, 153, 198–9, 204–7, 210–11, 230–1, 265–6
- Paterson, Isabel 315
- patience, virtues 328
- payout schedules 55–6, 115–49, 211–12, 292–5  
*see also* distributions
- peer groups 71–2, 165–71, 174–6, 180–92, 201–2, 219–31, 233–52
- penalty charges, late payments 123
- pension funds 11–12, 27, 50–1, 54–5, 95–113, 132, 145, 242, 278, 287–95  
*see also* institutional investors
- performance issues  
*see also* returns
- benchmarking 10, 41, 165–71, 174–92, 197, 219–31, 233–52
  - endowments 327–9
  - expected performance grades 181–8, 195, 219–31, 236, 239–52, 282–5, 317, 323–4
  - grading approach 5–6, 7, 63–4, 142–4, 153, 173–92, 219–31, 233–52, 282–5, 313–17, 323, 328–9
  - key performance drivers 59–61, 63
  - lower-quality funds 313–17
  - past performance 16, 153, 198–9, 204–7, 210–11, 230–1, 265–6
  - private equity funds 6, 12–13, 15–17, 19–21, 54, 59–72, 83–8, 95–113, 130, 142–4, 153–63, 165–71, 173–92, 193–231, 233–52, 265–6, 287–95, 313–17, 327–9
  - public equity comparisons 19–20, 82–3, 131–2, 169, 193–4, 257–60
  - tests 149
- Pilotto, Roberto 228
- platykurtosis 112
- policy objectives, lower-quality funds 314–17
- pooled performance, benchmarking 170–1, 240–2, 265–6
- portfolio design
- bottom-up/top-down construction approaches 81, 83–8, 137–8
  - case studies 95–113
  - concepts 62–72, 81–94, 95–113, 209–10
  - core–satellite portfolios 88–94, 317
  - cost averaging 90–2
  - framework 81–3
  - market timing 91–2
  - mixed construction approach 85–8
  - niche strategies 89, 235, 282
  - optimal allocations 71–2, 94, 95–113
  - risk–return management approaches 88–94, 328
- portfolio of funds, benchmarking 170–1
- portfolio management 4–7, 10–11, 14–15, 47–56, 59–72, 81–94, 133–5, 153–63, 209–10, 267, 303, 328–9
- concepts 5, 7, 59–72, 88–94, 133–5, 209–10, 267, 303, 328–9
  - core–satellite approach 88–94, 317
  - gut instincts 5, 133, 199, 328
  - limited partnerships 4, 6, 10–12
  - risk–return management approaches 88–94, 328
  - tools 7, 153–63
- portfolio theory 9–10, 59–72, 81–94, 97, 262–4
- portfolios 4–7, 9–11, 14–15, 47–56, 59–72, 81–94, 95–116, 133–5, 153–63, 209–10, 253–67, 274–86, 307, 328–9
- concepts 4–7, 9–11, 59–72, 81–94, 95–116, 133–5, 153–63, 209–10, 307
  - construction 7, 62–72, 81–94, 95–113, 313–17
  - diversification 59–72, 86, 90–4, 95–113, 121–2, 145, 188, 193, 207–8, 253–67, 299–300, 313
  - J curve 12–14, 109–13, 174, 245–52, 299–300
  - naive diversification 71–2, 83, 90–3
  - objectives 61–5
  - segmentation 18–24, 131–2, 307
  - sub-portfolios 88–94, 317
- predictions, success predictions 15–18
- preferred returns *see* hurdle rates
- premiums, risk 253–66
- prices
- options pricing 321–2
  - secondary transactions 299–310
- primary investments, funds-of-funds 48–51
- prisoners' dilemma 39
- private equity  
*see also* venture capital
- asset classes 6, 9–10, 131, 145, 159–62, 165–6
  - concepts 3–7, 9–26, 159–60, 165–71
  - definition 9, 159
  - institutional investors 3–4, 9–12, 18–21, 23–6, 50–1, 74–5, 197, 278–9, 327–9
  - routes 3–7
  - set-ups 7, 12–14, 95–113, 134–5, 230
  - sex comparisons 3
  - terminology 7
  - winemaking analogies 6, 169, 329
- private equity firms *see* fund managers
- private equity funds  
*see also* fund managers; limited partnerships
- agreements 27–38, 128, 162, 200–1, 212–18, 273–86, 289–95, 308, 320–1
  - appraised asset classes 159–62, 165–6

- private equity funds (*Continued*)
- benchmarking 10, 41, 165–71, 174–92, 197, 219–31, 233–52, 260, 300–7
  - CAPM 253–65
  - concepts 3–7, 9–15, 159–60, 165–71, 234–5, 248–52, 327–9
  - cornerstoning approaches 317
  - discount rates 156, 160, 253–67, 299–307
  - distributions 11–12, 13–14, 31, 37–9, 54–6, 115–49, 167, 211–12, 292–5, 306–7
  - documents 27–38, 214–16
  - due diligence 38, 44, 48–51, 63, 96–7, 178, 180, 194–8, 200–18, 219, 271–2, 276, 307–8, 320, 323, 328
  - economic cycles 6, 22–6, 174
  - entry barriers 6, 19–21, 25–6, 104–13, 116
  - exchange rates 77–80, 124–8
  - failures 18, 25–6, 61, 178, 243, 327–8
  - functions 14–15
  - grading approach 5–6, 7, 63–4, 142–4, 153, 173–92, 219–31, 233–52, 282–5, 302–7, 317, 323, 328–9
  - IAS 39 14, 234–5, 248–52, 301–2
  - internal grading systems 178–92, 219–31, 233–52, 282–5, 302–7, 317, 323, 328–9
  - J curve 12–14, 109–13, 174, 245–52, 277, 299–300
  - key person 35–6, 224–5
  - life cycle 24–6, 138–9, 175, 180–1, 186–8, 237–8, 286
  - long-term nature 50–1, 54–5, 75, 95–113, 115, 162, 175–6, 327–9
  - lower-quality funds 313–17
  - market dynamics 22–6
  - market values 73–80, 157–63, 234–6, 250–2
  - maturity issues 11, 13–14, 31, 134–5, 145, 149, 155–6, 243–52, 254, 265–6, 300, 304
  - monitoring needs 7, 38, 48–51, 63–72, 75, 87–8, 135, 139–40, 144–5, 168, 193, 271–86, 287–95, 323
  - performance issues 6, 12–13, 15–17, 19–21, 25–6, 48, 54, 59–72, 83–8, 95–113, 130, 142–4, 153–63, 165–71, 173–92, 193–231, 233–52, 265–6, 287–95, 313–17, 327–9
  - portfolio theory 81–94, 97, 262–4
  - public equity comparisons 19–20, 82–3, 131–2, 169, 193–4, 257–60
  - “quasi-standard” 11–12
  - random walks 105
  - real options 72, 200, 235–6, 319–25, 327–8
  - relationships 20–1, 23–6, 27–9, 30–2, 36–7, 48–51, 198–218, 284–6, 320–1
  - returns 3–4, 7, 9–11, 12–17, 19–21, 29, 33–4, 41–3, 52–5, 59–72, 76–94, 98–113, 116–44, 153, 165–71, 174–93, 327–9
  - risk 3, 5, 7, 9–10, 59–72, 81–94, 98, 115, 124–8, 165–71, 173–92, 253–67, 319–25, 327–9
  - scoring concepts 174, 183–92, 219–31, 234–6, 241–2, 282–5
  - secondary transactions 7, 14–15, 48–51, 54, 64–72, 76, 154–6, 160, 168, 216, 248, 297–310
  - size factors 25–6, 31, 83, 162, 208, 228, 286, 292–3, 304, 306, 320–1
  - social issues 213, 314–17
  - strategies 69–72, 83–9, 95–113, 130–3, 197–8, 207–10, 227–9, 284–5
  - structural issues 6–7, 10–12, 27–40, 45, 47–8, 161, 168, 229–30, 284–5
  - successes 15–21, 154–5, 194, 243–52, 271–2, 314, 327–8
  - transparency issues 5, 10–11, 29–31, 159–63, 202, 276–86
  - valuations 4–5, 13–16, 30–1, 43–4, 63–72, 73–80, 153–63, 173–92, 233–52, 282–5, 301–7, 319–23
  - VaR 73, 79–80, 241
- Private Equity Holding AG 168
- Private Equity Intelligence 166
- private equity managers 9
- Probitas Partners 125
- profit sharing 53–5
- projections, cash flows 14, 43–4, 61, 63–4, 76, 115, 117–49, 154–63, 174–6, 233–52, 304–7, 319–22, 328
- prospectuses 194–5
- prudence issues, due diligence 194–5
- publicly-quoted private equity 3, 19–20, 54, 82–3, 130–3, 168–9, 176–8, 193–4, 257–60
- concepts 3, 19–20, 54, 82–3, 130–3, 168–9, 193–4, 257–60
  - discounts 131–2
- qualitative factors
- decision making 5–6, 173–4, 180, 182–92, 195–6, 200, 219–31, 234–6, 281
  - scoring concepts 174, 183–92, 219–31, 234–6, 241–2, 282–5
- quality issues
- fund managers 4, 6, 15–16, 18–21, 26, 51, 54, 59–61, 83–8, 92–4, 135, 155, 174, 177–8, 193–218, 219–31, 234–6, 284–5, 303–4, 309–10, 327–9
  - institutional quality 18–21, 23–4, 235–6
- quantitative factors, decision making 5–6, 10, 68–72, 133–4, 138–42, 168, 173–4, 180, 182–92
- quartile gradings 6, 15–19, 48, 54, 63–4, 84–8, 179–83, 195, 233, 237–8, 242–52, 282–5, 328

- “quasi-standard”, private equity funds 11–12  
 questionnaires 188, 196–7, 202–18  
     due diligence 196–7, 202–18  
     example 202–18  
  
 random walks 105  
 rankings 174–6, 188, 234–6, 242–52  
 ratings 5–6, 153, 173–4, 176–81, 236  
 RCP & Partners 177  
 real options 72, 200, 235–6, 319–25, 327–8  
     analysis 321–2  
     concepts 319–25, 327–8  
     decision making 322–5, 327–8  
     definition 320–1  
     example 324–5  
     first-time funds 324–5  
     follow-on funds 320–2, 324–5  
     strategies 322–5  
 realisations, funding sources 124  
 recurrent investors, scoring dimensions 231  
 Red, Barbara 95–109, 287–90  
 “Red Queen” 10  
 regulatory requirements 4, 10–11, 27, 29–38, 65,  
     73–80, 212–18, 229–30, 277–9, 298, 301–2,  
     308–10  
 reinvestment plans 124, 276, 327–8  
 relationships  
     concepts 20–1, 23–6, 27–9, 30–2, 36–7, 48–51,  
     198–218, 284–6, 320–1  
     life cycle 24–6, 237–8, 286  
     private equity funds 20–1, 23–6, 27–9, 36–7,  
     48–51, 198–218, 284–6, 320–1  
 relative benchmarks 167–9, 174–5, 180–92, 231,  
     233–52  
     *see also* benchmarking  
 relative risk 65–7, 253–65  
     *see also* beta  
 relative volatility 261  
 replacement capital, definition 216  
 reporting requirements 4, 29–31, 63, 214–16,  
     241–2, 271–86, 287–95  
     *see also* monitoring...  
 reputations, fund managers 15–16, 18–19, 196, 226,  
     227, 230, 309  
 required return, concepts 253, 306–7  
 residual value to paid-in ratio (RVPI) 167, 170  
 resources, funds-of-funds 49–51  
 restructuring issues 7, 64–72, 285–6, 287–95  
 returns 3–4, 7, 9–11, 12–17, 19–21, 29, 33–4, 41–3,  
     52–5, 59–72, 76–94, 98–113, 116–44, 153,  
     165–71, 174–94, 239–42, 253–67, 327–9  
     *see also* internal rate...; J curve; performance...  
     benchmarking 10, 41, 165–71, 174–92, 219–31,  
     239–42, 260  
     buyouts 41–3, 45, 121–2, 262–4  
     expected final returns 98–113, 116, 130, 239–52  
     hurdle rates 29, 33–4, 39–40, 48, 127–8, 213–14,  
     230  
     IRR 12–14, 31, 40–2, 61, 66–7, 79–80, 97–101,  
     116–44, 158–9, 166–9, 181–92, 230,  
     237–52, 262–4, 277, 288–9, 294, 300,  
     303, 327  
     normal distributions 82–3, 93–4, 103–13  
     public equity comparisons 19–20, 82–3, 131–2,  
     169, 193–4, 257–60  
     risk 3, 7, 9–10, 59–72, 81–94, 137–8, 153,  
     165–71, 250, 253–67, 328–9  
     risk–return management approaches 88–94, 250,  
     328  
     secondary transactions 297–8  
     skewness 60, 82–3, 93–4, 99, 103–13  
     target rates 169–70  
     venture capital 41–3, 60, 121–2, 128–30, 153–63,  
     174–6, 257–67  
 Reyes, Jesse 17–18  
 risk 3, 5, 7, 9–10, 59–72, 81–94, 98, 115, 124–8,  
     165–71, 173–92, 253–67, 327–9  
     *see also individual types*  
     assessment methods 73–80, 153, 173–92, 319–25  
     attitudes 193–4, 238–9  
     betas 65–7, 253–65  
     CAPM 253–65  
     concepts 3–5, 9–10, 59–72, 73–80, 81–94, 98,  
     115, 124–8, 153, 168, 173–92, 193–4, 197,  
     253–67, 319–25, 327–9  
     due diligence 197  
     framework 73–80  
     governance 75, 214, 230, 309, 320  
     internal risk ratings 78, 173–4  
     measurement 65–72, 75, 98, 153, 165–6, 173–92  
     mitigation 67–8  
     monitoring needs 7, 38, 48–51, 63–72, 75, 87–8,  
     135, 168, 193, 271–86  
     premiums 253–66  
     returns 3, 7, 9–10, 59–72, 81–94, 137–8, 153,  
     165–71, 250, 253–67, 328–9  
     treatment 4, 168  
     types 73, 77–80, 106, 124–8, 149, 173–4, 176–7,  
     254–67  
     uncertainty contrasts 68–72  
     VaR 73, 79–80, 241  
     venture capital 5, 9–10, 257–67  
 risk management 5–6, 65–75, 153, 168, 177–8,  
     287–95  
     concepts 65–72, 73–5, 168  
     independent risk management function 73–5  
     roles 73–5  
 risk-adjusted pricing 65–72  
 risk-free rates 253–66, 321–2  
 risk–return management approaches, concepts  
     88–94, 250, 328  
 road shows 17



- Robet, Gabriel 95  
 Rubenstein, David 3  
 Russell 2000 258–60  
 RVPI *see* residual value to paid-in ratio
- S&P500 258–60, 265  
 Salter, Malcolm 315  
 satellite portfolios 88–94, 317  
 scenario analysis 97–102, 108–13, 117–22, 133–5,  
 142–4, 149, 233–7, 306–7  
 scoring concepts 174, 183–92, 219–31, 234–6,  
 241–2, 282–5  
   approaches 219–21, 234–6, 241–2  
   “blob” scores 220–1  
   corporate governance 230  
   costs 229–30  
   dimensions 221–31, 284–5  
   external validation 230–1, 284–5  
   overall fit 231, 284–5  
   strategies 227–9, 284–5  
   structural issues 229–30, 284–5  
   teams 221–7, 284–5  
   track records 230–1, 294–5  
 screening  
   fund-manager selection processes 197–202  
   portfolio construction 84  
 SEC *see* Securities and Exchange Commission  
 secondary transactions  
   benchmarking 300–7  
   bottom-up analysis 306–7  
   buyers 299–310  
   concepts 297–310  
   discount rates 299–307  
   diversification 299–300  
   fund managers 307–10  
   historical background 297  
   J curve 299–300  
   legal/tax issues 308–10  
   participants 297–300  
   prices 299–310  
   private equity funds 7, 14–15, 48–51, 54,  
     64–72, 76, 154–6, 160, 168, 216, 248,  
     297–310  
   reasons 297–300  
   sellers 297–310  
   statistics 297–8  
   strategies 298–9  
   structural issues 308  
   structured valuation reviews 306–7  
   top-down analysis 304–7  
   transactional issues 307–8  
   valuations 299–310  
 Securities and Exchange Commission (SEC) 9,  
 47, 277  
 securitisations 64–5, 67–8, 155–6, 309–10  
 seed companies 19, 41–6, 178–9, 207, 216, 274–5  
 segmentation, investment universe 18–24,  
 131–2, 307  
 selection bias 97  
 selection issues, fund managers 59–72, 83–8, 92–4,  
 107–13, 174–6, 193–218, 234–6, 243–52,  
 271–2, 275–6, 327–9  
 selection skills 50, 107–13, 174–6, 193–218,  
 221–4, 234–6, 243–52, 271–2, 275–6, 284,  
 327–9  
 “self-liquidating” funds 11, 54–5, 78  
 sell-offs, funding sources 124  
 sellers, secondary transactions 297–310  
 semi-captive funds 226  
 semi-deviation  
   concepts 98–113  
   formula 111  
 sensitivity analysis 137–8  
 Sequoia Capital 19  
 Serres, Michel 329  
 set-ups, private equity funds 7, 12–14, 95–113,  
 134–5, 230  
 sex comparisons, private equity 3  
 shaPE Capital 131  
 Sharpe ratio 98–101, 112  
 Silicon Valley 22, 275  
 Silver Leaf transaction 156, 309–10  
 simplicity techniques, uncertainty issues 71–2  
 simulations 97–102, 108–13, 137–8, 171, 240–2,  
 246, 306  
 size factors  
   private equity funds 25–6, 31, 83, 162, 208, 228,  
     286, 292–3, 304, 306, 320–1  
   teams 223–4, 228, 292–3  
 skewness  
   concepts 112–13  
   formula 112  
   returns 60, 82–3, 93–4, 99, 103–13  
 Smith, Terry 220  
 social issues 213, 314–17  
 soft factors, decision making 5  
 Sortino ratio 98–102, 112  
 special purpose vehicles (SPVs) 155–6, 309–10  
 specific monitoring 281–2  
   *see also* monitoring  
 spinouts 21–2, 317  
 sponsors 204, 313, 315–16  
 SPVs *see* special purpose vehicles  
 Standard & Poor’s 153, 177  
 standard deviation  
   concepts 98–113, 137–8, 239–42, 264, 321–2  
   formula 111  
   options pricing 321  
   TWSD 239–42  
 standard monitoring 279–81  
   *see also* monitoring

- 
- start-up companies 19, 41–6, 78, 160–3, 178–9, 207, 216, 274–5
  - Steers, Helen 81
  - STOXX 258–60
  - strategic fit 229
  - strategic liquidity practices 123–30
  - strategies 69–72, 83–9, 95–113, 130–3, 197–8, 207–10, 227–9, 284–5, 313–17
    - investment strategies 130–3, 197–8, 207–10, 227–9, 284–5, 313–17
    - lower-quality funds 313–17
    - portfolio construction 83–9, 95–113, 313–17
    - real options 322–5
    - scoring dimensions 227–9, 284–5
    - secondary transactions 298–9
    - uncertainty 69–72, 322–5
  - structural issues
    - decision making 327–9
    - funds-of-funds 47–8
    - limited partnerships 11–12, 23–6, 27–40, 47–8, 161, 229–30, 284–5
    - private equity 6–7, 10–12, 27–40, 45, 47–8, 161, 168, 229–30, 284–5
    - scoring dimensions 229–30, 284–5
    - secondary transactions 308
  - structured valuation reviews 306–7
  - style discipline, monitoring 274–6
  - sub-portfolios 88–94, 317
  - sub-standard funds *see* lower-quality funds
  - subordinated debt 41
  - subscription agreements 27–9, 53, 56, 130, 202
  - successes 6, 15–21, 25–6, 154–5, 194, 243–52, 271–2, 314, 327–8
    - definition 17
    - prediction problems 15–16
    - repeated successes 15–16
  - succession issues, teams 225
  - Summers, Lawrence 35
  - survivorship bias 81–2, 97, 166, 256
  - Swiss Private Equity Holding 54
  - switching costs 6
  - synthetic portfolios 104
  - systematic risk *see* market risk
  - systems
    - control systems 272–3
    - ecosystems 69–72, 319
  - tax requirements 10–11, 27, 132, 212–13, 308–10
  - Taylor series 102, 113
  - teams 15–16, 25–6, 195, 197–202, 204–7, 210–11, 221–7, 236, 284–5, 328
    - see also* fund managers
    - dynamics 198–9, 200–1, 204–7, 221–7, 284–5, 328
    - experience 198–9, 204–7, 210–11, 221–4
    - financial packages 225, 313
    - fund-manager selection processes 197–202, 204–6
    - incentives 12, 14–15, 32–3, 38–9, 48–51, 127–8, 225–6, 271–2, 284–5
    - independence issues 226
    - motivation factors 225–6, 284–5
    - outside activities 226–7
    - scoring dimensions 221–7, 284–5
    - size factors 223–4, 228, 292–3
    - stability needs 224–7, 284–5
    - succession issues 225
    - top teams 15–16, 25–6, 195, 222, 236–8, 282
    - track records 198–9, 204–7, 210–11, 221–4, 230–1, 294–5
  - terminal wealth standard deviation (TWSD) 239–42
  - termination clauses, general partners 36–8, 286, 289–95
  - tests, liquidity management 148–9
  - Thomson Venture Economics 17–18, 41–2, 139–48, 170, 176, 182, 266
  - time value of money 321–2
  - top funds 6, 15–19, 25–6, 48, 54, 63–4, 84–8, 195, 222, 236–8, 242–52, 282, 313–17, 327–9
  - top-down approach, portfolio construction 81, 83–8
  - top-down valuations 173, 304–7
  - total value to paid-in ratio (TVPI) 167, 170
  - track records, teams 198–9, 204–7, 210–11, 221–4, 230–1, 294–5
  - transaction costs 11–12, 253
  - transparency issues 5, 10–11, 29–31, 159–63, 202, 276–86
  - true and fair valuations 153, 188–9, 216, 233–6, 248–52, 294–5, 301–3
  - trust 28–9
  - TVPI *see* total value to paid-in ratio
  - TWSD *see* terminal wealth standard deviation
  - UK 17, 30, 73, 86–8, 125, 132, 154, 202, 213, 265, 272, 277, 279–80, 287, 293–4, 302, 314
  - uncertainty 5, 7, 61, 68–72, 115, 142, 156, 195, 238–9, 313–29
    - budgets 72, 200, 322–3
    - concepts 68–72, 238–9, 320–5, 328–9
    - real options 320–5
    - reduction methods 69–72, 195, 323–5
    - risk contrasts 68–72
    - strategies 69–72, 322–5
    - valuations 156, 320
  - underwriters 44
  - undrawn capital 130–3, 154–5, 174, 303–4
    - investment strategies 130–3
    - valuations 154–5, 174
  - up-front funding 53
  - USA 9, 19–21, 27, 47, 60, 86–8, 125–9, 132, 139–45, 202, 255–64, 265, 277–8, 287, 305, 308

- “valley of tears” 12–14, 174
- valuations
- accounting rule-based valuations 65, 160–3, 236, 248–52, 301–2
  - bottom-up valuations 4, 137–8, 154–63, 173, 188–92, 233, 306–7
  - buyouts 44, 153
  - cash flows 14, 43–4, 63–4, 76, 154–63, 174–6, 233–52, 304–7, 319–22
  - concepts 153–63, 173–92, 233–52, 282–5, 301–7, 319–24
  - grading-based economic model 63, 189–90, 219, 233–52, 282–5, 302–7, 323, 328–9
  - inconsistencies 157
  - NAV 13, 55, 131–2, 142, 149, 153–63, 167, 174–89, 254, 285–6, 300–7, 310
  - portfolio companies 154–63
  - private equity funds 4–5, 13–16, 30–1, 43–4, 63–72, 73–80, 153–63, 173–92, 233–52, 282–5, 301–7, 319–23
  - rankings 175–6, 188, 234–6, 242–52
  - reasons 153
  - risk-adjusted pricing 65–72
  - secondary transactions 299–310
  - techniques 4–5, 65, 153–63, 173–92, 233–52, 304–7
  - top-down valuations 173, 304–7
  - uncertainty 156, 320
  - venture-capital funds 4–5, 43–4, 153–63, 173–92, 233–52, 323–4
- value-added managers 3, 20–1, 48–51, 155–63, 276
- value-at-risk (VaR) 73, 79–80, 241
- value-creation benefits, monitoring 276
- VaR *see* value-at-risk
- variance 59–60, 90, 142–3
- VAT 213
- VC *see* venture capital
- VCH Equity Group 91
- venture capital
- see also* private equity
  - appraised asset classes 159–62, 165–6
  - business models 44–5, 162
  - buyout contrasts 41–6, 275, 324
  - concepts 4–7, 10–11, 12–13, 16–17, 19–21, 41–6, 49, 52–5, 60, 70–1, 73–5, 121–2, 128–30, 139–47, 153–63, 165–71, 173–94, 202–18, 257–67, 275, 314–17, 323–4, 327–9
  - deal structuring 45
  - discount rates 156, 160, 253–67
  - distributions-in-kind 128–30
  - due-diligence questionnaires 202–18
  - economic cycles 6, 22–6, 174
  - general managers 45–6
  - innovations 5, 10, 14–15, 20, 22–6, 41–6, 70–1, 142, 153–63, 315–16, 322
  - returns 41–3, 60, 121–2, 128–30, 153–63, 174–6, 257–67
  - risk 5, 9–10, 257–67
  - social issues 314–17
  - stages 43
  - success statistics 16, 19, 314
  - terminology 7
  - transparency issues 159–60, 202, 276–86
  - valuations 4–5, 43–4, 153–63, 173–92, 233–52, 323–4
- Venture Economics 166, 240–1
- Venture One 166
- veto 285–6
- vintage years 61, 91–4, 139–45, 168, 174–6, 181, 220, 242–52, 265–6, 328
- volatility 81–2, 137–8, 201, 258–64, 321–2
- warrants 41
- “watch lists”, fund managers 275, 288–9
- Waight, Stuart 230–1
- wealth
- fund managers 14–15, 34–5
  - TWSD 239–42
- Weisdorf, Mark 227
- Weiss, Harold 225
- what-if analysis 117
- Wickenkamp, Rolf 227
- Wilkins, Roger 223–4, 226, 228
- winemaking analogies, private equity 6, 169, 329
- winners *see* successes
- wish list, fund managers 197–202, 236
- write-offs, NAVs 175, 277
- Yahoo! 19
- Yale model 117–22, 233
- Yell 125
- yield curves 304–6
- zero coupon bonds 254, 304–6