

EVALUATING CORPORATE FINANCIAL PERFORMANCE TOOLS AND APPLICATIONS

JACEK WELC

MOREMEDIA



Evaluating Corporate Financial Performance

Jacek Welc

Evaluating Corporate Financial Performance

Tools and Applications

palgrave
macmillan

Jacek Welc
SRH Berlin University of Applied Sciences
Berlin, Germany

Wroclaw University of Economics
Wrocław, Poland

ISBN 978-3-030-97581-4

ISBN 978-3-030-97582-1 (eBook)

<https://doi.org/10.1007/978-3-030-97582-1>

© The Editor(s) (if applicable) and The Author(s), under exclusive license to Springer Nature Switzerland AG 2022, corrected publication 2022

This work is subject to copyright. All rights are solely and exclusively licensed by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The publisher, the authors and the editors are safe to assume that the advice and information in this book are believed to be true and accurate at the date of publication. Neither the publisher nor the authors or the editors give a warranty, expressed or implied, with respect to the material contained herein or for any errors or omissions that may have been made. The publisher remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Cover illustration: Friedhelm Steinen-Broo

This Palgrave Macmillan imprint is published by the registered company Springer Nature Switzerland AG

The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

Corporate financial statements constitute one of primary sources of information used in business and investment decision making, both by corporate insiders (e.g. managers, supervisory boards, etc.) as well as by external parties (e.g. stock investors, bankers, suppliers, market regulators, government bodies, etc.). Consequently, a solid understanding of fundamentals of accounting and financial reporting (including its merits as well as its weaknesses and “backshores”) is deemed a precondition for any diligent and robust examination of business performance, in case of both small, family-owned ventures as well as huge global corporations. It is worth remembering that elements of a financial statement analysis appear not only in purely financial investigations, but also in corporate strategic planning.

This textbook is aimed at guiding its reader, in a step-by-step way, through fundamentals of corporate accounting (i.e. three primary financial statements and notes to them), as well as through most commonly applied tools of a financial statement analysis (including techniques of retrospective assessment of a business performance, as well as procedures of future-oriented financial simulations). It opens with two chapters that explain a content of accounting reports themselves. While Chapter 1 discusses three primary financial statements (income statement, balance sheet and cash flow statement), Chapter 2 is devoted to notes to financial statements. Chapter 3, in turn, demonstrates some classical tools (such as ratio analysis and multivariable credit risk models) useful in a retrospective financial statement analysis. Then, the following chapter deals with one of the simple step-by-step procedures of a prospective (i.e. future-oriented) financial statement simulation. The book closes with the chapter that offers a comprehensive real-life case study (that demonstrates a practical application of most of the analytical tools discussed earlier in the text) of Norwegian Air Shuttle, an airline that defaulted financially in 2020.

The author's main goal was to offer a textbook that is strongly biased toward practical applications of the most commonly applied tools of a retrospective and prospective financial statement analysis. At the same time, the author's intention was to offer a text that may be understandable and “digestable” for all those interested in an applied business analysis who are not trained accountants. Accordingly, no mathematical proofs or complex theoretical concepts appear in this text.

Instead, all the discussed topics and methods are demonstrated with the use of real-life accounting data, extracted from published annual reports of selected global corporations.

The first four chapters of this text include numerous real-life examples, mostly (but not exclusively) based on accounting data of selected global car manufacturers, for fiscal years 2007 and 2008. The author's selection of this particular industry was not random, since most car manufacturers are involved into capital-intensive, highly competitive and deeply cyclical businesses, manifested in balance sheets in which all major classes of assets (i.e. noncurrent tangible assets, intangibles, inventories, receivables, etc.), as well as liabilities (i.e. prepayments, trade payables, borrowings, etc.), are well represented. Likewise, a choice of the period, that is fiscal years 2007 and 2008, had its own purpose as well. Namely, it captures two dramatically different sub-periods, from a perspective of an economic environment: (i) a time until the end of the third quarter of 2008 (when global economy fared quite well), and (ii) the fourth quarter of 2008, when the global financial crisis (and following economic recession) broke out, eroding a demand for vehicles deeply. That sharp turnaround (in the second half of 2008) of an international economic climate immediately translated into a financial performance of global car manufacturers: while in the first three quarters of 2008 a median sales growth among six European industry players (BMW, Daimler, Fiat, Peugeot/Citroen, Renault and Volkswagen) equaled +0.5% y/y, in the last quarter of that year their revenues contracted by as much as 17.7%, on average. Accordingly, a fast-changing financial performance of car manufactures in that turbulent period seems to offer a good educative value.

Apart from its content, this textbook is intended to offer an innovative teaching toolkit, that reaches beyond the book content itself. Accordingly, an entire set of closely related teaching materials includes:

1. **This “core” textbook** itself, as a primary teaching tool that is structured into five comprehensive chapters (of which the first four offer a step-by-step guide through a comprehensive financial statement analysis, while the fifth one constitutes a single comprehensive real-life case study that deals with most of the topics presented in the preceding four chapters).
2. **Online appendices** (constantly updated and extended) to the “core” textbook, consisting of additional comprehensive real-life case studies (of varying degrees of complexity and dealing with different aspects of a practical financial statement analysis).
3. **A set of MS Excel files** that contain all major calculations included in tables and charts that appear in the “core” textbook (i.e. within its five chapters).
4. **A set of webinars in MP4 format**, in which selected and most fundamental parts of the “core” textbook are discussed in the form of the recorded lectures.

The author believes that such a comprehensive set of complementary teaching materials may grossly enrich and facilitate a reader's learning process, since the individual webinars (that offer an introduction to a given topic, in a form of a

lecture) may be watched first (with a support from the accompanying underlying Excel files) and may be followed by a reading of a more detailed discussion of a given topic, in the “core” textbook. A set of online appendices, in turn, offers a “training field” whereby an application of the analytical tools, learned from the webinars and textbooks, may be mastered with the use of numerous real-life data.

Huge majority of real-life examples presented in this textbook are based on accounting numbers (and narrative disclosures) extracted from corporate financial reports prepared in accordance to either International Financial Reporting Standards (abbreviated to IFRS across the text) or U.S. Generally Accepted Accounting Principles (abbreviated to U.S. GAAP). However, most of the issues and analytical techniques, discussed in this publication, are applicable to other accounting systems as well. Therefore, the author believes that the content of this manuscript is universal, in a sense that it may be interesting for all financial statement users around the world.

Berlin, Germany
July 2021

Jacek Welc

Contents

1 Primary Financial Statements as the Source of Information for Company's Financial Analysis	1
1.1 Three Primary Financial Statements	1
1.2 Separate and Consolidated Financial Statements	2
1.3 Content of an Income Statement	5
1.3.1 What Is an Income Statement?	5
1.3.2 Basic Operating Results	6
1.3.3 Other Operating Income and Other Operating Expenses	7
1.3.4 Financial Result	10
1.3.5 Income Taxes	12
1.3.6 Net Earnings	14
1.3.7 Components of Corporate Total Income Excluded from Income Statement	16
1.4 Content of Balance Sheet	19
1.4.1 What Is a Balance Sheet?	19
1.4.2 Classes of Assets	20
1.4.3 Classes of Fixed (Non-current) Assets	21
1.4.4 Classes of Current (Short-Term) Assets	31
1.4.5 Classes of Liabilities	40
1.4.6 Classes of Shareholders' Equity	51
1.5 Content of a Cash Flow Statement	57
1.5.1 What Is a Cash Flow Statement?	57
1.5.2 Three Classes of Corporate Cash Flows and Formats of a Cash Flow Statement	58
1.5.3 Operating Cash Flows	59
1.5.4 Investing Cash Flows	62
1.5.5 Financing Cash Flows	65
1.5.6 Net Cash Flows	66

1.6 EXERCISE—Preliminary Review of Income Statement, Balance Sheet and Cash Flow Statement of Lumentum Holdings	68
1.6.1 Tasks and Questions	68
1.6.2 Answers	71
References	75
2 Notes to Financial Statements as an Important Source of Information for a Financial Statement Analysis	77
2.1 Nature and Purposes of Notes to Financial Statements	77
2.2 Notes on Sales Revenues	78
2.3 Notes on Other Operating Income and Other Operating Expenses	81
2.4 Notes on Financial Income and Financial Expenses	84
2.5 Notes on Intangible Assets	85
2.6 Notes on Tangible Fixed Assets	89
2.7 Notes on Receivable Accounts	93
2.8 Notes on Inventories	100
2.9 Notes on On-Balance Sheet Liabilities	101
2.10 Notes on Provisions	106
2.11 Notes on Off-Balance Sheet Liabilities and Contingent Obligations	107
2.12 Notes on Financial Statement Consolidation, Non-controlling Interests and Business Combinations	109
2.13 Notes on Significant Accounting Policies	113
2.14 EXERCISE—Review of Selected Notes to Consolidated Financial Statements of Lumentum Holdings	124
2.14.1 Tasks and Questions	124
2.14.2 Answers	126
Reference	130
3 Financial Statement Analysis	131
3.1 Accounting Ratios as a Primary Tool of a Financial Statement Analysis	131
3.2 Profitability Ratios	132
3.2.1 Nature and Types of Profitability Ratios	132
3.2.2 Profitability of Sales	133
3.2.3 Profitability of Assets (ROA) and Shareholders' Equity (ROE)	140
3.3 Financial Risk Ratios	143
3.3.1 Nature and Types of Financial Risk Ratios	143
3.3.2 Selected Financial Risk Ratios	146
3.4 Turnover Ratios	151
3.5 Cash Flow Analysis	159
3.6 Business Valuation Ratios	170

3.7	Multivariable Credit Risk Models	180
3.8	Impact of Industry-Specific and Company-Specific Factors on Observed Values of Selected Financial Statement Ratios	191
3.9	Fundamental Relationships Between ROE and Its Drivers (DuPont Analysis)	197
3.10	Most Important Pitfalls of a Financial Statement Analysis	201
3.11	EXERCISE—Retrospective Financial Statement Analysis of Lumentum Holdings	203
3.11.1	Tasks and Questions	203
3.11.2	Answers	207
	References	209
4	Prospective Financial Statement Analysis and Simulations	213
4.1	Introduction	213
4.2	Analytical Procedure in a Prospective Financial Statement Analysis	214
4.3	Past (Historical) Financial Statements as a Departure Point in a Prospective Financial Statement Analysis	216
4.4	Context of a Prospective Financial Simulation and Its Underlying Assumptions	219
4.5	Preliminary Income Statement and Preliminary Balance Sheet	222
4.6	Equalizing Left-Hand Side and Right-Hand Side of Balance Sheet	230
4.6.1	Closing Balance Sheet Gap via Cash and Current Financial Assets	230
4.6.2	Closing Balance Sheet Gap via an Issuance of New Equity	232
4.6.3	Closing Balance Sheet Gap via Financial Liabilities (Borrowings)	233
4.7	Impact of Considered Scenarios on Prospective Financial Statement Ratios	243
4.8	Simulation and Analysis of Prospective Cash Flow Statement	248
4.9	Exercise—Prospective Financial Statement Analysis of Lumentum Holdings	250
4.9.1	Tasks and Questions	250
4.9.2	Answers	255
	Reference	256
5	Real-Life Case Study: A Flight to a Bankruptcy of Norwegian Air Shuttle	257
5.1	Introduction	257
5.2	The Norwegian's Growth and Economic Performance in Fiscal Years 2014 Through 2016	258

5.3	Evaluation of Norwegian's Financial Performance in Fiscal Years 2015–2016	259
5.3.1	Condensed Income Statement and Balance Sheet	259
5.3.2	Analysis of Selected Financial Statement Ratios	262
5.3.3	Analysis of Reported Cash Flows	264
5.3.4	Assessment of the Company's Credit Risk Based on Selected Multivariate Models	265
5.3.5	Summary of Findings of the Norwegian's Retrospective Financial Statement Analysis	268
5.4	Preliminary Prospective Income Statement Simulated for Fiscal Year 2017	269
5.4.1	Forecast of Sales Revenues	269
5.4.2	Forecast of Aviation Fuel Expense	272
5.4.3	Forecast of Non-Fuel Operational Expenses	274
5.4.4	Forecast of Depreciation and Amortization Expense	276
5.4.5	Assumptions and Forecasts of Other Income Statement Items	277
5.4.6	Preliminary Prospective Income Statement (Before Its Further Adjustments)	284
5.5	Preliminary Prospective Balance Sheet Simulated for Fiscal Year 2017	284
5.5.1	Forecast of Carrying Amount of Property, Plant and Equipment (Including Prepayments to Aircraft Manufacturers)	284
5.5.2	Forecast of Carrying Amount of Other Noncurrent (Long-Term) Assets	286
5.5.3	Forecast of Carrying Amount of Inventory and Receivable Accounts	287
5.5.4	Assumptions and Forecasts of Other Asset Items	288
5.5.5	Forecast of Carrying Amount of Equity	288
5.5.6	Forecast of Carrying Amount of Liabilities	289
5.5.7	Preliminary Prospective Balance Sheet (Before Its Further Adjustments)	291
5.5.8	Preliminary Prospective Operating Cash Flows	291
5.6	Consideration of Available Options for Bridging an Uncovered Funding Gap	294
5.6.1	Issuance of New Equity Shares	295
5.6.2	Further Increase in Indebtedness	296
5.6.3	Reduction of the Company's Asset Base	298
5.6.4	Combination of More Than One of the Options	299
5.7	Actual Developments in Fiscal Years 2017 and 2018	299
5.7.1	Oil Price Change and Norwegian's Accounting Earnings in Fiscal Year 2017	299
5.7.2	Norwegian's Actual Funding Gaps and Cash Flows in Fiscal Years 2017 and 2018	302

5.7.3 Norwegian's Ultimate Bankruptcy and "Epitaph"	304
Appendix: Published Financial Statements of Norwegian Air	
Shuttle for Fiscal Years 2015 and 2016	304
References	309
Correction to: Real-Life Case Study: A Flight to a Bankruptcy of Norwegian Air Shuttle	C1
References	311
Index	319

List of Figures

Chart 1.1	Hypothetical example of a group of companies (<i>Source Author</i>)	2
Chart 1.2	Hypothetical example of the relationships between a parent company, its subsidiaries and the minority (non-controlling) interests (<i>Source Author</i>)	15
Chart 1.3	Model balance sheet of a company (<i>Source Author</i>)	19
Chart 2.1	Volkswagen Group's revenues from sales of vehicles and parts, as well as from its rental and leasing business, between fiscal years 2005 and 2010 (<i>Source Annual reports of Volkswagen Group for fiscal years 2006–2010</i>)	80
Chart 4.1	Linear trend of Volkswagen Group's sales revenues (in EUR million) in fiscal years 2006–2008 (<i>Source Annual reports of Volkswagen Group [for various fiscal years] and authorial computations</i>)	225
Chart 5.1	Revenue trend of Norwegian Air Shuttle in fiscal years 2009 through 2016 (<i>Source Annual reports of Norwegian Air Shuttle [for various fiscal years] and authorial computations</i>)	270
Chart 5.2	Trend of logged values of Norwegian's annual revenues between fiscal years 2009 and 2016 (*Common logarithms of reported operating revenues. <i>Source Annual reports of Norwegian Air Shuttle [for various fiscal years] and authorial computations</i>)	270
Chart 5.3	Statistical relationship between global price of oil (in USD per barrel) and Norwegian's ratio of aviation fuel cost to sales revenues (*Data from the next-to-last column of Table 5.11, **Data from the last column of Table 5.11. <i>Source Annual reports of Norwegian Air Shuttle [for various fiscal years], Federal Reserve Bank of St. Louis and authorial computations</i>)	273

Chart 5.4 Statistical relationship between year-over-year changes in global price of oil, in USD per barrel, and year-over-year changes on USD/NOK currency rate (between January 2008 and December 2016) <i>(Source</i> Federal Reserve Bank of St. Louis and authorial computations)	279
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-----

List of Tables

Table 1.1	Consolidated income statement of Volkswagen Group for fiscal years 2007 and 2008	5
Table 1.2	Hypothetical impact of sale of a fixed assets on revenues growth	9
Table 1.3	Consolidated net earnings of company A (resulting from shareholding relationships depicted on Chart 1.2)	16
Table 1.4	Consolidated statement of comprehensive income of Volkswagen Group for fiscal years 2008 and 2009	18
Table 1.5	Consolidated noncurrent assets of Volkswagen Group, as at the end of fiscal years 2007 and 2008	29
Table 1.6	Consolidated current assets of Volkswagen Group, as at the end of fiscal years 2007 and 2008	39
Table 1.7	Consolidated liabilities of Volkswagen Group as at the end of fiscal years 2007 and 2008	51
Table 1.8	Consolidated shareholders' equity of company A, that reflects equity interests depicted on Chart 1.2 (earlier in the chapter)	55
Table 1.9	Consolidated equity of Volkswagen Group, as at the end of fiscal years 2007 and 2008	56
Table 1.10	Consolidated operating cash flows (abbreviated to OCF) of Volkswagen Group in fiscal years 2007 and 2008	61
Table 1.11	Consolidated investing cash flows (ICF) of Volkswagen Group in fiscal years 2007 and 2008	64
Table 1.12	Consolidated financing cash flows (FCF) of Volkswagen Group in fiscal years 2007 and 2008	66
Table 1.13	Consolidated net cash flows of Volkswagen Group in fiscal years 2007 and 2008	67
Table 2.1	Extract from Note 1 to financial statements of Volkswagen Group for fiscal year 2008 (Breakdown of the company's sales revenue)	78
Table 2.2	Extract from Note 5 to the financial statements of Volkswagen Group for fiscal year 2008 (other operating income)	82

Table 2.3	Extract from Note 6 to the financial statements of Volkswagen Group for fiscal year 2008 (other operating expenses)	82
Table 2.4	Net monetary contribution of three broad categories of other operating results into the operating profit of Volkswagen Group in fiscal years 2007 and 2008	83
Table 2.5	An adjustment of operating profit of Volkswagen Group, reported for fiscal years 2007 and 2008, for non-recurring items of other operating income and other operating expenses	84
Table 2.6	Extract from Note 9 to financial statements of Volkswagen Group for fiscal year 2008 (Other financial result)	84
Table 2.7	Extract from Note 12 to financial statements of Volkswagen Group for fiscal year 2008 (carrying amounts of intangible assets)	86
Table 2.8	Extract from Note 12 to financial statements of Volkswagen Group for fiscal year 2008 (Amounts related to capitalized development costs recognized as expenses)	87
Table 2.9	Extract from Note 13 to financial statements of Volkswagen Group for fiscal year 2008 (Property, plant and equipment)	90
Table 2.10	Volkswagen Group's accounting policy toward leasing and rental assets	91
Table 2.11	Extract from Note 14 to financial statements of Volkswagen Group for fiscal year 2008 (Leasing and rental assets and investment property)	92
Table 2.12	Extract from Note 16 to consolidated financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current financial services receivables)	95
Table 2.13	Extract from Note 16 to financial statements of Volkswagen Group for fiscal year 2008 (Receivables from finance leases at the end of 2008)	97
Table 2.14	Extract from Note 32 to financial statements of Volkswagen Group for fiscal year 2008 (credit and default risk relating to financial assets)	98
Table 2.15	Extract from Note 32 to consolidated financial statements of Volkswagen Group for fiscal year 2008 (Maturity analysis of gross amounts of financial assets that are past due but not impaired)	99
Table 2.16	Extract from Note 19 to financial statements of Volkswagen Group for fiscal year 2008 (Inventories)	101
Table 2.17	Extract from Note 23 to financial statements of PSA Peugeot Citroën for fiscal year 2008 (Inventories)	102

Table 2.18	Extract from Note 25 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current financial liabilities)	103
Table 2.19	Extract from Note 26 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current other liabilities)	104
Table 2.20	Extract from Note 17 to financial statements of Fiat Group for fiscal year 2008 (Maturity structure of debt)	105
Table 2.21	Extract from Note 29 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current other provisions)	106
Table 2.22	Extract from narrative information provided in Note 29 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current other provisions)	106
Table 2.23	Extract from Note 34 to financial statements of Volkswagen Group for fiscal year 2008 (Contingent liabilities)	107
Table 2.24	Extract from Note 38 to financial statements of BMW Group for fiscal year 2008 (Other financial obligations)	108
Table 3.1	Profitability of sales ratios of Volkswagen Group in fiscal years 2007 and 2008	137
Table 3.2	Profitability of sales ratios of selected car manufacturers in fiscal year 2008	139
Table 3.3	Return on assets (ROA) and return on equity (ROE) of Volkswagen Group in fiscal years 2007 and 2008	142
Table 3.4	ROA and ROE of selected car manufacturers in fiscal year 2008	143
Table 3.5	Financial risk ratios of Volkswagen Group as at the end of fiscal years 2007 and 2008	148
Table 3.6	Financial risk ratios of selected car manufacturers in fiscal year 2008	150
Table 3.7	Formulas for selected turnover ratios (for annual periods, consisting of 365 days)	152
Table 3.8	Turnover ratios (expressed as numbers of cycles in a year) of Volkswagen Group in fiscal years 2007 and 2008	155
Table 3.9	Turnover ratios (expressed as numbers of days) of Volkswagen Group in fiscal years 2007 and 2008	156
Table 3.10	Turnover ratios (expressed as numbers of cycles in a year) of selected car manufacturers in fiscal year 2008	159
Table 3.11	Four possible combinations of corporate cash flows with positive operating cash	161
Table 3.12	Four possible combinations of corporate cash flows with negative operating cash	163

Table 3.13	Breakdowns of cash flows reported by selected car manufacturers in fiscal year 2008	166
Table 3.14	Selected cash flow-based ratios of Volkswagen Group in fiscal years 2007 and 2008	168
Table 3.15	Cash flow-based ratios of selected car manufacturers in fiscal year 2008	169
Table 3.16	Market value of equity, net debt, non-controlling interests and enterprise value (EV) of Volkswagen Group, as at the end of fiscal years 2007 and 2008	175
Table 3.17	Valuation multiples of Volkswagen Group, as at the end of fiscal years 2007 and 2008	176
Table 3.18	Selected valuation multiples of major German car manufacturers, as at the end of fiscal year 2008	177
Table 3.19	Simplified comparative (relative) valuation of fair value of the Volkswagen Group's shareholders' equity, as at the end of fiscal year 2008	179
Table 3.20	Financial data of Volkswagen Group needed to compute five explanatory variables of the Altman's original model (Altman-1)	183
Table 3.21	Computation of Z-score (Altman-1) for Volkswagen Group, as at the end of fiscal years 2007 and 2008	184
Table 3.22	Financial data of Volkswagen Group (other than those presented in Table 3.20) needed to compute the explanatory variables of the Altman's updated model (Altman-2)	184
Table 3.23	Computation of Z-score (Altman-2) for Volkswagen Group, as at the end of fiscal years 2007 and 2008	185
Table 3.24	Financial data of Volkswagen Group needed to compute the explanatory variables of the Taffler's model	186
Table 3.25	Computation of Z-score (Taffler) for Volkswagen Group, as at the end of fiscal years 2007 and 2008	186
Table 3.26	Estimation of standard deviations of return on Volkswagen Group's assets in two five-year periods (i.e. fiscal years 2003–2007 and 2004–2008)	187
Table 3.27	Financial data of Volkswagen Group needed to compute the values of explanatory variables for the PHP model (other than those presented in Table 3.26)	188
Table 3.28	Computation of Z-score (PHP) for Volkswagen Group, as at the end of fiscal years 2007 and 2008	188
Table 3.29	Credit ratings of Volkswagen AG, Volkswagen Financial Services AG and Volkswagen Bank GmbH issued in fiscal years 2007–2009 by rating agency Standard & Poor's	189
Table 3.30	Definitions of "AA", "A" and "BBB" credit rating classes, according to a rating agency Standard & Poor's	190

Table 3.31	Median values of selected financial statement ratios ^a within twelve selected industries (data for fiscal year 2014)	192
Table 3.32	Selected accounting data and financial statement ratios of H&M, Inditex and Prada Group for fiscal year 2014	195
Table 3.33	Relationships between ROE and its three fundamental drivers (DuPont analysis)	198
Table 3.34	Return on equity of three global car manufacturers in fiscal year 2008	199
Table 3.35	Inputs (other than those disclosed in Table 3.34) necessary for a calculation of net profitability, assets turnover and financial leverage ratios of three global car manufacturers, in fiscal year 2008	199
Table 3.36	Breakdown of ROE, earned by three global car manufacturers in fiscal year 2008, into its three fundamental drivers	200
Table 4.1	Condensed income statement of Volkswagen Group for fiscal years 2007 and 2008 (based on data shown in Table 1.1)	216
Table 4.2	Condensed balance sheet of Volkswagen Group for fiscal years 2007 and 2008 (based on the data shown in Tables 1.5, 1.6, 1.7 and 1.9)	217
Table 4.3	Selected financial statement ratios of Volkswagen Group: their actual values in fiscal year 2008 and values assumed for fiscal year 2009 (based on the numbers shown in Tables 4.1 and 4.2, as well as the assumptions explained in Sect. 4.4)	223
Table 4.4	Additional financial statement ratios of Volkswagen Group: their actual values in fiscal years 2007 and 2008 and values assumed for fiscal year 2009 (based on the numbers shown in Tables 4.1 and 4.2 as well as on some other annual report disclosures)	224
Table 4.5	Forecasts of Volkswagen Group's dividend paid, carrying amount of tangible and intangible noncurrent assets and depreciation and amortization expense in fiscal year 2009	225
Table 4.6	Actual (in fiscal year 2008) and preliminary prospective (for fiscal year 2009) income statement of Volkswagen Group, under three hypothetical scenarios	226
Table 4.7	Actual (in fiscal year 2008) and preliminary prospective (for fiscal year 2009) balance sheet of Volkswagen Group, under three hypothetical scenarios	228
Table 4.8	Actual (in fiscal year 2008) and prospective (for fiscal year 2009) amount of funding gap/excess funds of Volkswagen Group, under three hypothetical scenarios	229

Table 4.9	Condensed actual (in fiscal year 2008) and prospective (for fiscal year 2009) balance sheet of Volkswagen Group, under three hypothetical scenarios, after equalizing both its sides via cash and other current assets	231
Table 4.10	Condensed actual (in fiscal year 2008) and prospective (for fiscal year 2009) balance sheet of Volkswagen Group, under three hypothetical scenarios, after equalizing both its sides via an issuance of new equity shares	233
Table 4.11	Hypothetical prospective (for fiscal year 2009) debt-free income statement and balance sheet of Volkswagen Group under three hypothetical scenarios	236
Table 4.12	Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the first iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)	238
Table 4.13	Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the second iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)	240
Table 4.14	Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the third iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)	242
Table 4.15	Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the fourth (final) iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)	244
Table 4.16	Actual (for fiscal year 2008) and prospective (for fiscal year 2009) values of selected financial statement ratios of Volkswagen Group	246
Table 4.17	Volkswagen Group's actual (for fiscal year 2008) and simulated (for fiscal year 2009) EBITDA-to-debt ratio and its relationship with credit ratings of Standard & Poor's	247
Table 4.18	Prospective (for fiscal year 2009) condensed cash flow statement of Volkswagen Group, under Scenario 3, for three alternative ways of bridging the funding gap in the company's prospective balance sheet	249

Table 5.1	Selected operating and financial data of Norwegian Air Shuttle for fiscal years 2014–2016	258
Table 5.2	Condensed income statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data shown in Appendix to the chapter)	260
Table 5.3	Condensed balance sheet of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data shown in Appendix to the chapter)	261
Table 5.4	Selected financial statement ratios of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data displayed in Tables 5.2 and 5.3)	263
Table 5.5	Condensed cash flow statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data shown in Appendix to the chapter)	264
Table 5.6	Inputs needed to calculate the Norwegian's values of variables that appear in all analyzed credit risk assessment models, for fiscal years 2015 and 2016	266
Table 5.7	Computation of Z-score (Altman-1) for Norwegian Air Shuttle, as at the end of fiscal years 2015 and 2016	267
Table 5.8	Computation of Z-score (Altman-2) for Norwegian Air Shuttle, as at the end of fiscal years 2015 and 2016	267
Table 5.9	Computation of Z-score (Taffler) for Norwegian Air Shuttle, as at the end of fiscal years 2015 and 2016	268
Table 5.10	Reported revenues, logged revenues and revenue growth rates of Norwegian Air Shuttle in fiscal years 2009 through 2016	271
Table 5.11	Norwegian's cost of aviation fuel and its relation to the company's revenues and global oil prices	272
Table 5.12	Norwegian's ratio of CASK (non-fuel operating expenses per one available seat kilometer) to RASK (revenues per one available seat kilometer)	275
Table 5.13	Norwegian's depreciation and amortization expenses and their relation to lagged carrying amounts Norwegian's depreciable property, plant and equipment (PPE) ^a	277
Table 5.14	Extract from Note 20 (Financial instruments) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016, disclosing a breakdown of the company's other losses (+) / gains (-), net	278
Table 5.15	Carrying amounts of Norwegian's assets and liabilities related to foreign exchange contracts and forward commodities contracts (as at the end of 2015 and 2016)	278

Table 5.16	Extract from Note 20 (Financial instruments) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016, explaining the company's forward commodities contracts	278
Table 5.17	Impact of changing global oil price (at year-end) on Norwegian's other losses / gains (net)	280
Table 5.18	Extract from Note 08 (Net financial items) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016	281
Table 5.19	Extract from Note 25 (Investments in other entities) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016	282
Table 5.20	Norwegian's shares of profits from associated companies in fiscal years 2010 through 2016	282
Table 5.21	Norwegian's pre-tax and after-tax profits / losses in fiscal years 2010 through 2016	283
Table 5.22	Historical (for fiscal years 2015 and 2016) and prospective (for fiscal year 2017) condensed income statement of Norwegian Air Shuttle	285
Table 5.23	Ratio of carrying amount of Norwegian's property, plant and equipment (including prepayments to aircraft manufacturers) to its annual operating revenues in fiscal years 2013 through 2017	286
Table 5.24	Ratio of carrying amount of Norwegian's inventory and receivable accounts to its revenues in fiscal years 2013 through 2017	287
Table 5.25	Ratio of carrying amount of Norwegian's total (i.e. combined noncurrent and current) operating payables to the company's non-depreciation operating expenses in fiscal years 2013 through 2017	290
Table 5.26	Historical (for fiscal years 2015 and 2016) and prospective (for fiscal year 2017) condensed balance sheet of Norwegian Air Shuttle	292
Table 5.27	Historical (for fiscal years 2015 and 2016) and prospective (for fiscal year 2017) condensed operating cash flows of Norwegian Air Shuttle	294
Table 5.28	Simulated and actual operating results of Norwegian Air Shuttle in 2017	300
Table 5.29	Results on non-operating activities, pre-tax and after-tax losses of Norwegian Air Shuttle in fiscal year 2017	301
Table 5.30	Condensed cash flow statement of Norwegian Air Shuttle for fiscal years 2017 and 2018 (based on data reported in the company's annual report for fiscal year 2018)	303

Table 5.31	Consolidated income statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)	305
Table 5.32	Consolidated balance sheet (Assets) of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)	306
Table 5.33	Consolidated balance sheet (Equity and liabilities) of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)	307
Table 5.34	Consolidated cash flow statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)	308



Primary Financial Statements as the Source of Information for Company's Financial Analysis

1

1.1 Three Primary Financial Statements

A comprehensive and rigorous analysis of company's economic and financial situation always involves significant amount of information (of both financial and non-financial nature). However, the financial statements of an investigated company constitute by far the most important information source. The purpose of the full set of financial statements is to present the comprehensive picture of the company's **historical performance**.

The three primary financial statements comprise:

- **Income statement**, showing the company's revenues, expenses and profits (or losses) for a specified time interval (e.g. a year or a quarter).
- **Balance sheet**, showing the company's assets, liabilities and shareholders' equity at a given date (e.g. at the end of a year or at the end of a quarter).
- **Cash flow statement**, showing the company's main sources of cash inflows and main directions of cash outflows in a specified time interval.

A full financial report of a company (e.g. its annual report) includes also **statement of changes in shareholders' equity** and notes to the financial statements. Statement of changes in shareholders' equity presents the breakdown of the change of company's total shareholders' equity into its main driving factors (e.g. proceeds from issued shares, retained earnings, dividends paid or revaluations of assets). Most of the information offered by the statement of changes in shareholders' equity may be found elsewhere in a financial report. Thus, this financial statement

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-030-97582-1_1.

will not be discussed in this textbook. In contrast, **notes to the financial statements** (also called **financial statement footnotes**) provide invaluable and detailed information about the individual items of company's revenues, expenses, assets and liabilities. Therefore, they are very important in financial statement analysis. Thus, the notes to the financial statements will be discussed in Chapter 2.

The following sections of this chapter discuss the content of the three primary financial statements (i.e. income statement, balance sheet and cash flow statement), while the following chapter deals with notes to the financial statements. However, these readings do not provide a detailed discussion of the foundations of financial statement preparation (such as matching principle or double-entries principle), which are covered by the accounting textbooks. Instead, the author's intention is to focus on those accounting issues which are particularly relevant for a financial statement user (rather than for an accountant).

1.2 Separate and Consolidated Financial Statements

Before discussing primary financial statements it is legitimate to explain the distinction between separate and consolidated financial statements. Generally speaking, **separate (stand-alone) financial statements** report financial results of a single company, while **consolidated financial statements** present financial results of a group of related companies, composed of a parent company and its subsidiary companies (i.e. the companies over which the parent company holds a control). The consolidated financial statements report the results of a group of separate legal entities as if they are a single company (Dodge, 1996; Flower & Ebbers, 2002).

Suppose that Company A owns shares in a shareholders' equity of other four companies, as illustrated on Chart 1.1.

For accounting purposes companies B, C, D and E are typically classified as follows (Tennant, 2018):

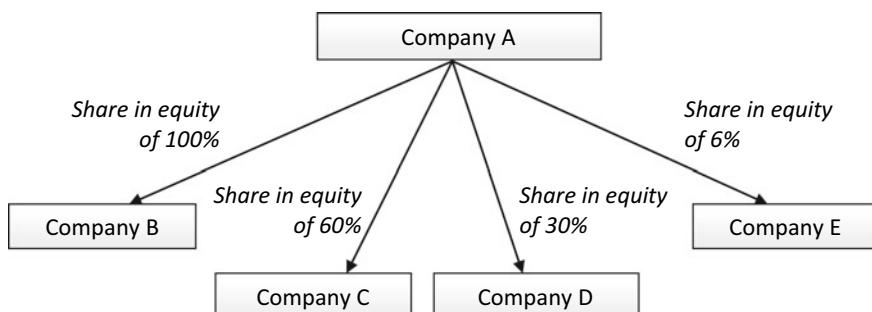


Chart 1.1 Hypothetical example of a group of companies (Source Author)

- Companies B and C are controlled by Company A, because of its majority interest in their shareholder's equities (thus B and C are called **subsidiaries**, while A is their **parent company**).
- Company D is considered to be under significant influence (but not a control) by Company A, because of A's significant (although minority) shareholding in D's equity (thus, D is called an **associated company** or **affiliated company**).
- Company E is considered to be out of significant influence from Company A, because of A's relatively small interest in E's equity (consequently, shares in E possessed by A are classified as **financial instruments**).

Basically, **control** is assumed when parent company holds more than 50% of voting rights on shareholder's meeting of its subsidiary, while **significant influence** is assumed when a company owns between 20 and 50% of voting rights. The shareholdings below 20% are deemed to be lack any significant influence. However, these are just simplified principles and accounting standards (such as IFRS) provide much more detailed guidance on classifying individual equity investments as controlled subsidiaries, associated (affiliated) companies or financial instruments. On the ground of these guidelines companies often claim to control other entities despite owning less than 50% of voting rights (e.g. thanks to voting agreements with other shareholders or significant dispersion of other shareholders), or they state lacking control despite possession of more than 50% of voting rights (e.g. due to specific legal regulations). Moreover, a percentage of shareholding is not necessarily equal to percentage of voting rights, due to existence of preference shares which may grant, for example, two voting rights per one share. However, for a simplicity of a following discussion, we assume that in the case of the relationships depicted on Chart 1.1 the percentage of shareholding is equal to percentage of voting rights and constitutes the only factor which is to be considered in stating the existence or lack of control and significant influence.

Distinction between control, significant influence and other equity investments is very important for financial reporting. This is so because any company that holds controlling interests in other entities prepares two types of financial reports: separate and consolidated financial statements. In separate (stand-alone) financial statements the individual line items contain only the amounts attributable to a parent company. For example, a separate income statement of Company A would include only revenues, expenses and taxes of Company A itself, while its balance sheet would contain only individual line items of its own assets and liabilities. Thus, generally speaking, none of the revenues, expenses, assets and liabilities of companies B, C, D and E would be included in A's separate financial statements.

In contrast, the individual line items of consolidated financial statements contain aggregated revenues, expenses, assets, liabilities and cash flows of a parent company and all of its controlled entities (subsidiaries), after adjusting for any intra-group transactions (i.e. transactions between parent and its subsidiaries or between individual subsidiaries). Thus, a consolidated income statement of Company A would sum revenues, expenses and taxes of A, B and C, while its balance

sheet would sum assets and liabilities of these three companies (with consolidation adjustments for the financial effects of transactions between A, B and C). The non-controlled entities, however, are treated differently. The financial results of affiliated company D are reported in only one line item of A's income statement (containing A's proportional share in D's profits or losses) and in only one line item of A's balance sheet (containing A's proportional share in D's net assets). The financial results of company E (which is neither under control nor under significant influence), in turn, are not directly reflected in A's consolidated financial statements. Instead, A treats its shares in E as financial instruments and either periodically revalues them to fair value (if possible) or report them at historical cost. However, it is important to keep in mind that these are very general rules and that specific equity investments may be treated differently under different accounting standards and in different circumstances.

To sum up, in the A's consolidated financial statements:

- All individual line items would contain the sums of respective amounts from separate financial statements of A, B and C, adjusted for intra-group transactions (if any) between A, B and C (this is called a **full consolidation**).
- A's share in D's profits (or losses) and in D's net assets would be reflected in only one item of A's consolidated income statement and one item of A's consolidated balance sheet, respectively (this is called an **equity method consolidation**).
- A's investment in E's shares would be either periodically revalued to fair value or held at its historical cost (without any direct reflection of E's financial results in A's consolidated statements).

Referring to the consolidation of accounting numbers of companies B and C, by company A, it is important to note that financial results of subsidiaries are always fully consolidated with financial results of the parent company, regardless of the parent's share in the equity of these controlled entities. Thus, the full consolidation of B and C by A entails summing full amounts of all items of assets, liabilities, revenues, expenses and cash flows of A and both its subsidiaries (with adjustment for effects of intra-group transactions), regardless of the fact that A possesses 60% interest in C's equity (and thus there are other parties entitled to participate in C's economic achievements). In such cases, these non-controlling (minority) shareholders of a subsidiary are reflected in only one item of A's consolidated income statement and only one item of A's consolidated balance sheet (without any reference to it in a consolidated cash flow statement). This issue will be discussed with more details later in the chapter.

Generally speaking, in case of companies that hold a control over other entities (i.e. form groups of companies), a financial statement analysis is conducted on the basis of their consolidated financial statements. In contrast, companies which do not have any subsidiaries do not prepare consolidated financial statements. As a result, their financial performance is evaluated on the ground of their separate financial reports.

1.3 Content of an Income Statement

1.3.1 What Is an Income Statement?

The **income statement** (also called **statement of profit or loss** or **statement of operations**) presents the financial results of a company in a specified interval of time, e.g. year, quarter or month. It presents the company's revenues, expenses and earnings (or losses).

Table 1.1 presents an example of consolidated income statement of Volkswagen Group, for fiscal years 2007 and 2008. Later in this book the abbreviation "VW" will be used for Volkswagen Group.

From an analytical point of view the main levels of the income statement cover:

- Basic operating results: net sales, cost of goods sold, general and administrative expenses, gross profit on sales, profit on sales.
- Other operating income and other operating expenses (including extraordinary and one-off items).
- Financial income and financial expenses.
- Pre-tax earnings, income taxes (current and deferred) and net earnings.

Table 1.1 Consolidated income statement of Volkswagen Group for fiscal years 2007 and 2008

In EUR million	Note	2007	2008
Sales revenue	1	108,897	113,808
Cost of sales	2	92,603	96,612
Gross profit		16,294	17,196
Distribution expenses	3	9,274	10,552
Administrative expenses	4	2,453	2,742
Other operating income	5	5,994	8,770
Other operating expenses	6	4,410	6,339
Operating profit		6,151	6,333
Share of profits and losses of equity-accounted investments	7	734	910
Finance costs	8	1,647	1,815
Other financial result	9	1,305	1,180
Financial result		392	275
Profit before tax		6,543	6,608
Income tax income/expense	10	2,421	1,920
<i>Current</i>		2,744	2,338
<i>Deferred</i>		-323	-418
Profit after tax		4,122	4,688
Minority interests		2	-65
Profit attributable to shareholders of Volkswagen AG		4,120	4,753

Source Annual report of Volkswagen Group for fiscal year 2008

In the case of **groups of companies** (composed of the controlling entity and its subsidiaries), the consolidated net earnings are broken down into:

- Net earnings attributable to shareholders of the parent company.
- Net earnings attributable to non-controlling interests.

1.3.2 Basic Operating Results

The first line item on the top of the income statement is usually **sales revenue**, which is also being called net sales or turnover. Sales revenues cover the revenues obtained from selling products or services distributed or manufactured by the company. They should include only revenues from the primary (core) business operations. In the case of VW, these are mainly the sales of cars parts and related services (e.g. car repairs).

Cost of sales, also called **cost of goods sold**, covers the expenses incurred for the manufacture or purchase of the products or services sold in the period. These costs:

- Include only costs which are directly attributable to the products or services sold (e.g. raw materials, direct labor) or indirectly attributable to these products or services (e.g. depreciation of production lines, electric power consumed by production departments, indirect labor, etc.).
- Do not include any costs related to the purchase or manufacture of inventories at hand.
- Do not include basic and recurring operating costs, which are incurred in relation to a general administration of the company (i.e. general and administrative expenses) as well as to its sales operations (selling expenses).

In the VW's case, the cost of sales includes mainly expenses incurred on a manufacture of vehicles and parts (together with related services), which were sold in a period.

A difference between sales revenue and cost of sales results in **gross profit**, also called **gross margin** or **gross profit on sales**. This line item informs about the profit of the business, in calculation of which only the revenues and costs related to the products and services sold have been accounted for. In the case of Volkswagen Group, the gross profit is the difference between revenues obtained mainly from sales of vehicles, parts and services, and the expenses related for manufacturing those very vehicles (omitting non-manufacturing expenses, such as administrative and selling costs).

Administrative expenses, also called **general and administrative expenses**, cover the costs related to the general functioning of the company, which are repeatedly incurred but cannot be reasonably attributed to any specific products, services

or business segments. The examples are costs of accounting, marketing (but not distribution), HR and IT departments, depreciation of a company's headquarter, salaries of the managing board, maintenance of laboratories, etc.

Distribution expenses, also called **selling costs** or **selling expenses**, capture all costs related to a company's sales operations. The examples are salaries and commissions of the sales representatives, transportation of goods sold to customers or printing and distributing sales catalogues.

A difference between gross profit and administrative and distribution expenses results in **profit on sales**. Some companies disclose it as a separate line item on the face of their income statement, while in the case of other entities (including VW) it is not presented and thus must be computed by an analyst.

Gross profit and profit on sales are considered as the most fundamental and sustainable sources of corporate earnings. This is so because they are generated from recurring and core business operations (like manufacturing and selling vehicles) and are expected to be continued in the future.

It is important to note that under most accounting standards (including IFRS) companies have two alternative options for reporting their basic operating expenses on the face of the income statement. Majority of corporations (including Volkswagen Group) classify those expenses **by function**, that is according to where in the company (i.e. in which functional areas of its core business operations) these expenses were incurred. Typically such classification distinguishes between three broad functional areas in which operating costs are generated: manufacturing or merchandising operations (where costs of sales relate to), sales operations (where distribution expenses are incurred) and administrative operations (where general and administrative expenses occur). Alternatively, the basic operating expenses may be classified and reported **by nature**, where the focus is on the type of a given cost (e.g. raw materials and energy consumption, employee salaries, rental fees, depreciation and amortization, etc.) rather than on where it was incurred.

1.3.3 Other Operating Income and Other Operating Expenses

Other operating income (also called **other operating revenues**) and **other operating expenses** (also called **other operating costs**) capture those income and expense items, which are indirectly related to the company's main operations.

The examples of commonly met other operating income are:

- Gains on sales of property, plant and equipment (e.g. the uses production lines).
- Reversals of write-downs of assets (e.g. impaired inventories or doubtful receivable accounts).
- Received compensations (e.g. from insurance companies).
- Government grants other than related to fixed assets.

The examples of common other operating expenses are:

- Losses on sales of property, plant and equipment.
- Impairment write-downs of assets.
- Restructuring provisions.
- Paid compensations and fines (e.g. for customer claims).

While basic operating results relate directly to the company's core business operations, the other operating income and other operating expenses are only indirectly linked to these operations. For instance, if the core business of Volkswagen Group is defined as designing, manufacturing and selling vehicles (and related services), then:

- All costs of designing and developing its models of vehicles are included in administrative expenses.
- All costs of producing the cars sold in the period (including raw materials, spare parts, salaries of assembly line workers, etc.) are included in cost of sales.
- All costs of marketing and distributing the manufactured cars are included in distribution expenses.

In contrast, other operating results relate to income and expense items which can be considered "side-effects" of the core business operations. They are indirectly related to the core operations, but are not part of them. As such, these income and expense items often have a one-off or extraordinary nature, which means that they are not expected to be steadily recurring in the foreseeable future. But even if they recur, this usually happens irregularly and at monetary amounts that are difficult or impossible to predict.

For example, a company might follow a strategy of replacing any old manufacturing machine (by a new one) after no more than ten years of service (e.g. to maintain its intended output quality, which tends to deteriorate as the asset gets older and older). Suppose that this company owns a ten-year-old production line, with a carrying (book) value of 1,000 EUR. It intends to sell that old line and replace it by a new one. If a typical useful life of such assets is, say, 15 years, then perhaps some other manufacturer may be interested in purchasing this used production line and continue using it (by another five years). The asset's book value of 1,000 EUR does not mean that its market value also equals 1,000 EUR. Instead, the company may be able to sell its old production line for more or less than its carrying amount. If the production line is disposed of for, say, 1,500 EUR, then the company earns a one-off gain amounting to 500 EUR (i.e. a difference between the asset's sale price and its book value). Such a gain should not be included in sales revenues, since it could significantly distort a picture of the company's financial results and growth prospects.

Table 1.2 Hypothetical impact of sale of a fixed assets on revenues growth

Amounts in EUR	2019	2020	Change y/y
Sales revenues from sales of company's products	5,000	4,700	-6%
Gain from sale of a production line	0	500	-
Total operating revenues	5,000	5,200	+4%

Source Author

Suppose that our hypothetical company's operating revenues look as shown in Table 1.2. In 2020 its recurring revenues from sales of products declined by 6%. However, in the same year the company gained 500 EUR from a disposal of its used production line, which constitutes a non-recurring income (at least in the near future). If such a one-off gain is included in sales revenues, then a false picture of the company's development emerges, showing the seeming growth of revenues by 4%. It would have a misleading impact on an analysis of the company's trends of revenues and earnings.

A fictional example presented above illustrates a relevance of presenting gains and losses, which are only indirectly related to core business operations (and usually have a non-recurring or unusual nature), in separate line items of the income statement. Thanks to this the sales revenues on the top of the income statement are stripped out from distorting effects of much more irregular (than sales of products) other operating gains and losses. However, not all of the items commonly included within other operating income and other operating expense are similarly non-recurring as sales of fixed assets. For instance, the other operating costs may include impairment write-downs of receivable accounts, i.e. amounts of money owed to the company by its customers (from credit sales). If a given firm offers extended payment terms to its customers, it faces a risk of a non-collection of some of the resulting trade receivable accounts. When some of those accounts indeed become doubtful (i.e. bearing a significant risk of non-collection), then their carrying amounts are written down, with a resulting loss often included in other operating expenses. If those doubtful accounts are ultimately collected in later periods, then their prior write-downs are reversed and a resulting gain is included in other operating income. However, unlike gains or losses on sales of fixed assets, the losses from doubtful receivables are expected to recur as long as the company continues offering its extended payment terms. The same applies to write-downs (and their reversals) of inventories. In such cases treating write-downs of assets as non-recurring, particularly if they materially affect total operating profit, may dramatically distort findings of the company's profitability analysis. Furthermore, individual items included in other operating results differ significantly in terms of their impact on corporate financial liquidity. While some of the other operating gains and losses have a non-cash nature (e.g. write-downs of assets or restructuring provisions), other items may affect the company's cash flows (e.g. received government grants or fines paid to customers).

One of common analytical errors is a mechanical treatment of non-cash items of other operating results (such as write-downs of assets) as negligible from the point of view an evaluation of corporate profitability (Burgstahler et al., 2002). It is often incorrectly assumed that these items reflect one-off and non-cash events and do not impact the company's financial standing. However, such an uncritical neglect of those items of income (particularly if their monetary amounts are material) is a mistake, due to the following reasons:

- Impairment write-downs of assets, as well as their reversals, are subjective and based on multiple assumptions which are often very difficult to verify.
- Write-downs of assets often constitute an evidence of a managerial ineffectiveness (e.g. in planning inventory levels, production capacity or granting credit terms to customers) and managerial errors committed in prior periods.

Consequently, if other operating income and other operating expenses significantly affect a given company's reported earnings, they should be scrutinized diligently, item-by-item (on the basis of information disclosed in notes to financial statements, which will be discussed in Chapter 2), with the focus on the following issues (Cready et al., 2012; Fan et al., 2010; Smith, 1992):

- Relative impact (on earnings) of those items of other operating results which have a non-recurring nature (as compared to more regularly occurring items).
- Relative significance of those items of other operating results which have a non-cash nature.
- Relative impact (on earnings) of those items of other operating results which are particularly vulnerable to subjective managerial judgments and estimates (as compared to items which are more objective or based on formal underlying documents).

An analysis of impact of other operating results on corporate earnings will be illustrated in Chapter 2, with the use of Volkswagen Group's accounting numbers.

A difference between other operating income and other operating expenses gives other operating result, while a sum of profit on sales and other operating result gives **operating profit**. It is interpreted as income earned (or loss incurred) on all business activities which are directly and indirectly related to core business operations.

1.3.4 Financial Result

In a structure of an income statement, the operating profit is typically followed by financial results. These are the results generated by a given company's activities that are not related to its operating business. Instead, they typically cover two broad categories of income-affecting items:

- Financial results of equity or debt investments, other than into shares in the equity of subsidiaries (e.g. interests earned on Treasury or corporate bonds, interest earned on bank deposits, dividends received, gains or losses on derivative instruments).
- Financial costs related to the company's debt (e.g. interest paid or owed to banks).

Within the financial result section of its income statement, Volkswagen Group includes three line items:

- Share of profits and losses of equity-accounted investments.
- Finance costs.
- Other financial result.

The first of these items presents the VW's share in the accounting profits earned by its associated companies (including joint ventures). These are entities that are not controlled by VW, usually due to the VW's minority share in their shareholders' equity. However, these entities are deemed to be significant influenced by VW (a circumstance which is usually assumed when an equity interest exceeds 20%). Financial statements of those associates cannot be fully consolidated line-by-line with VW's statements, because of lacking control. However, VW is entitled to participate in these companies' profits. Thus, the associates' earnings which are attributable to Volkswagen Group are accounted for in this single line item of its consolidated income statement. For instance, suppose that the company holds 30% share in the equity of its affiliated company, which reports net earnings of 1,000 EUR in a period. The VW's monetary share in the affiliate's earnings ($30\% \times 1,000 \text{ EUR} = 300 \text{ EUR}$) is added to its consolidated earnings, as share of profits and losses of equity-accounted investments. It must be kept in mind, however, that this item of the VW's consolidated income statement shows the company's share in reported accounting profits (or losses) of its associates (and not the actual cash dividends received from them).

Finance costs reported by Volkswagen Group are probably composed of interest costs associated with the company's debts owed to creditors (banks, bondholders, etc.). Likewise, from a face of its income statement we can only hypothesize that "*other financial result*" includes profits earned by Volkswagen Group on its financial investments (other than into shares of associated entities). However, obtaining more detailed insights on these issues requires digging into Note 9 to the company's financial statements. In light of a significant positive contribution of "*other financial result*" into the VW's profit before tax, the content of that note will be scrutinized in Chapter 2.

1.3.5 Income Taxes

A difference between an operating profit and a financial result gives **profit before tax**, also labeled as **gross earnings** or **pre-tax earnings**. This is a number that takes into account all basic operating results, other operating results and financial results. It may be interpreted as an income which a company would be able to distribute to its shareholders (as dividends) if it is exempt from income taxes. However, corporate earnings are taxable and income statement must account for income taxes.

As we might see in the VW's income statement, its entire income tax expense is broken down into two separate (but related) numbers: current income tax and deferred income tax. This is so because firms apply differing accounting principles for their financial reporting (for which VW applies International Financial Reporting Standards) and for income tax purposes (for which individual companies, forming the entire Volkswagen Group, apply tax regulations effective in their respective tax jurisdictions). Consequently, any company's taxable income may significantly deviate from its reported profit before tax (also called **book earnings**), as presented in its income statement. In other words, reported pre-tax earnings do not constitute a basis for calculating and settling corporate income taxes. It is even not uncommon that a company incurs a tax loss while reporting positive pre-tax earnings (or the reverse: it may report a pre-tax loss while having positive taxable income).

A detailed discussion of common discrepancies between taxable income and book earnings (book-tax differences) lies beyond the scope of this book. Therefore, only a brief introduction to those issues will be offered below.

Generally speaking, discrepancies between taxable income and book earnings may be classified as:

- Either permanent differences,
- Or temporary differences.

Permanent book-tax differences are associated with the following types of revenues and expenses:

- Accounting revenues that are not taxable—for instance, in some tax jurisdictions an interest earned on Treasury or municipal bonds is tax-free (and as such, it is included in financial income in income statement, while not giving a rise to an income tax).
- Accounting expenses that are not tax deductible—for instance, in most countries penalty fines for environmental pollution do not reduce a taxable income (and as a result, any company penalized by such fines will have to report them, usually within other operating expenses, but will not be able to subtract them from its taxable income).
- Taxable revenues that are not accounting revenues—for example, in some tax jurisdictions a taxable profit from a sale of an asset is computed on the ground

of that asset's estimated fair market value (instead of its actual sales price), if the former is higher (and as a result, when a firm sells an asset at a price that falls below its fair value, than an excess of the latter over the former is part of a taxable income, while it is not included in revenues in income statement).

- Tax-deductible costs that do not constitute accounting expenses—for example, in many countries intangible assets with indefinite useful lives, such as acquired brands, may be amortized for tax purposes (decreasing taxable income), while under IFRS they are reported at historical cost and not amortized (and consequently, they are not expensed in income statement, while being included in a computation of the taxable income).

Permanent book-tax differences are therefore associated with:

- Either those items of revenues and expenses that are reported in an income statement but are not (and will never be) taken into account in a computation of a taxable income,
- Or those items of revenues and expenses that are accounted for in the computation of a taxable income but are not (and will never be) reported in the income statement.

In contrast, **temporary book-tax differences** reflect:

- Either those items of revenues and expenses that are reported in an income statement in a current period but are taken into account in a computation of a taxable income in a different period,
- Or those items of revenues and expenses that are included in the taxable income in a current period but are reported in the income statement in a different period.

Some common examples of the temporary book-tax differences are:

- Depreciation of property, plant and equipment—firms may apply different depreciation periods (useful lives) for financial reporting and for tax purposes (e.g. a company may depreciate its production line in its financial statements throughout its estimated useful life of ten years, while depreciating it for tax purposes throughout a shortest period allowed by tax regulations, e.g. five years).
- Advance payments received from customers—in many tax jurisdictions, prepayments received from customers, for ordered goods or services, are taxed when obtained, while for financial reporting purposes a recognition of these revenues may be deferred until the ordered goods or services are delivered (and as a result, these advance revenues are recognized earlier for income tax settlements than in financial reporting).
- Interest income earned on zero-coupon bonds—the interest on zero-coupon bonds, although not collected until maturity, is accrued and reported as financial

income during the bond holding period, while it is taxed only when bonds are redeemed.

- Impairment write-downs of inventories—write-downs associated with impairments of inventories are presented in income statement as other operating costs, while they become tax-deductible only when a related inventory is actually sold.

The temporary book-tax differences constitute a basis for estimating **deferred income tax**, as shown in income statement. This is a purely accounting number and as such it has no any direct relationship with actual income taxes, paid by a company in a given period. Only **current income tax** is related to actual corporate taxable income. In the Volkswagen Group's case, the deferred taxes were negative in both 2007 and 2008. Consequently, a total income tax reported in the company's income statement was lower than actual income taxes paid. It means that income taxes, paid by all entities within the entire Volkswagen Group, exceeded hypothetical income taxes that would have been paid if the VW's consolidated profit before tax equaled its taxable income.

A diligent investigation of current and deferred income taxes constitutes an advanced topic of a financial statement analysis. Divergences between taxable income and reported pre-tax earnings (particularly if book earnings significantly exceed taxable income) are a powerful tool in evaluating quality and comparability of reported profits. As such they are useful in detecting earnings manipulations and “creative accounting” practices. These issues, however, reach beyond the scope of this book. An interested reader may find a more detailed discussion (accompanied by multiple real-life examples) in more advanced texts (e.g. Welc, [2020](#)).

1.3.6 Net Earnings

Bottom lines of an income statement are reserved for **net earnings**, also called **profit after tax** or **after-tax earnings**. They are computed as a difference between profit before tax and income tax expense (both current and deferred). However, in this section of their income statements firms often report three numbers (instead of just one):

- Total net earnings.
- Net earnings attributable to shareholders of a parent company.
- Net earnings attributable to non-controlling (or minority) interests.

A necessity of providing these three numbers results from procedures of financial statement consolidation. Majority of larger corporations operate as groups of companies, composed of a parent company and its subsidiaries. However, in many cases, the parent company is not the only shareholder of its subsidiaries. Instead, it

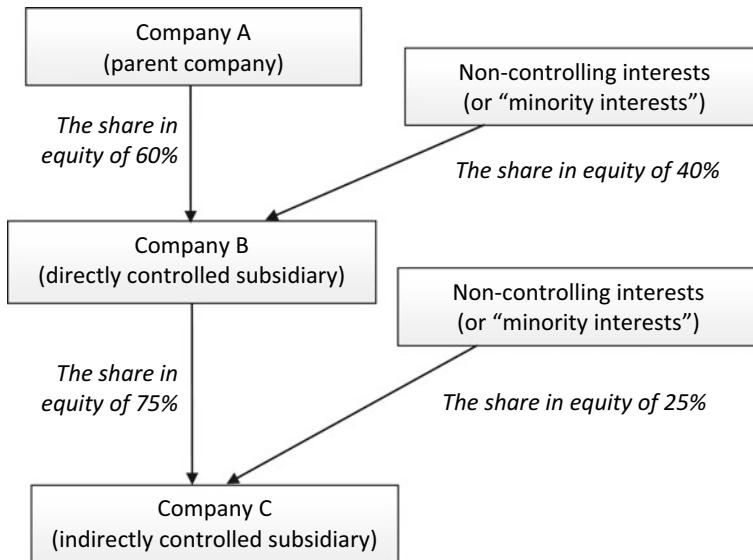


Chart 1.2 Hypothetical example of the relationships between a parent company, its subsidiaries and the minority (non-controlling) interests (Source Author)

may control its subsidiary by owning, for instance, 60% interest in its shareholders equity. A remaining 40% of shares may be owned by other shareholders (e.g. stock market investors). A fictional example of a simple structure of this kind is depicted on Chart 1.2.

In a case of a structure of relationships as depicted on Chart 1.2, a parent company A controls its directly controlled subsidiary B, thanks to owning 60% of shares in its equity. Company B, in turn, directly controls company C, thanks to holding 75% of shares in its shareholders' equity. Accordingly, it can be concluded that A indirectly controls C.

In such a case, according to principles of a financial statement consolidation, company A fully consolidates financial results of both companies B and C. It means that in A's consolidated income statement all individual line items of income statements of both its subsidiaries (i.e. their sales revenues, costs of sales, operating profits, etc.) are added in full amounts to the respective numbers reported in the parent's separate income statement. If, for instance, separate net earnings of A, B and C are 2,000 EUR, 1,000 EUR and 400 EUR, respectively, then the reported consolidated total net earnings of A amount to 3,400 EUR (provided that there were no any intra-group transactions between A, B and C, that would have to be adjusted for on consolidation). However, a control held by A over B and C does not entail an entitlement to fully participate in their earnings, when those earnings are distributed to shareholders as dividends. Out of 1,000 EUR of B's net earnings, only 600 EUR is attributable to A, according to A's 60% interest in B's equity. A remaining 400 EUR is attributable to B's non-controlling shareholders. Likewise,

Table 1.3 Consolidated net earnings of company A (resulting from shareholding relationships depicted on Chart 1.2)

Amounts in EUR	
Net earnings for the reporting period	3,400
<i>Attributable to:</i>	
Shareholders of the parent company ^a	2,780
Non-controlling interests	620

^aA's separate net earnings (2,000 EUR) + B's net earnings attributable to A (600 EUR) + C's net earnings attributable to A (180 EUR)

Source Author

only 45% of C's net earnings is attributable to A, because A's indirect interest in C's equity is 45% [= $60\% \times 75\%$]. Thus, C's net earnings attributable to A's shareholders amount to 180 EUR [= $45\% \times 400$ EUR]. As a result, a net earnings section of A's consolidated income statement would look as depicted in Table 1.3.

A high share of non-controlling interests in total consolidated net earnings may erode a credibility and usefulness of consolidated income statements. This is so because in such a circumstance an analyst lacks an information about where the individual line items of the consolidated income statement (e.g. revenues or operating profit) are generated: on a parent company level or by its non-wholly owned subsidiaries. It stems from the fact that total consolidated net earnings constitute the only one income statement item in which case a share of non-controlling interests is disclosed.

In both 2007 and 2008 a share of minority interests in the VW's total consolidated net earnings was immaterial. Thus, it was not a major issue from the point of view of a general credibility and reliability of the VW's consolidated income statements reported for those two years. In 2008 the share of minority interests in consolidated net earnings was negative, which means that a profit after tax attributable to VW's shareholders exceeded a total fully consolidated profit after tax. Apparently Volkswagen Group controlled and consolidated one or more non-wholly owned subsidiaries that incurred after-tax losses in 2008.

1.3.7 Components of Corporate Total Income Excluded from Income Statement

In a financial statement analysis, it is important to be aware that some accounting standards (including IFRS) permit or require an exclusion of some elements of a company's total income from its net earnings reported in an income statement. Instead, these elements of income are recognized directly in equity and may be reported in a supplementary statement, which is called **statement of other comprehensive income**. For instance, since 2009 IFRS require all items of income and expense recognized in a period to be included in:

- Either a **single statement of comprehensive income** (where both net earnings as well as other comprehensive income are reported in a single statement),
- Or in two separate statements, comprising a separate **income statement**, that includes components of profit or loss, and a second statement commencing with profit or loss and reporting **other components of comprehensive income**.

If any company chooses the former option, then it does not report a separate income statement. Instead, it reports the statement of comprehensive income, which shows all items typically reported in an income statement (e.g. revenues, expenses, net earnings), as well as gains and losses that are recognized directly in equity. In contrast, a company which selects the latter option reports its total income for a period in two separate statements: (i) an income statement that ends with net earnings and (ii) a statement of other comprehensive income that discloses all gains and losses recognized directly in equity.

Under IFRS the components of other comprehensive income, which are excluded from a calculation of net earnings, include:

- Changes in the fair value of available-for-sale investments recognized directly in equity.
- Cash flow hedges deferred in equity.
- Asset revaluation gains (recognized in accordance with IFRS 16).
- Foreign currency gains and losses on translation of the financial statements of net investments in foreign operations recognized directly in equity.
- Actuarial gains and losses deferred in equity.

Accounting for asset revaluation gains will be illustrated with more details later in the chapter. A detailed discussion of the remaining four components of other comprehensive income lies beyond a scope of this textbook (and more detailed readings may be found in IFRS textbooks). However, in a financial statement analysis, it is important not to overlook an impact of other comprehensive income on company's total income and equity, if significant. Particularly, an analysis of a company's profitability (discussed in Chapter 3) should not ignore non-negligible losses excluded from net earnings and recognized directly in equity.

In 2007 and 2008 Volkswagen Group reported its total comprehensive income in two separate statements: an income statement and statement of comprehensive income. The latter was reported under this label since 2009 (and until 2008 a company called it a Statement of Recognized Income and Expense of Volkswagen Group). Despite a change of its name (and minor shifts in an order of information disclosed) done in 2009, a general content of this statement stood virtually intact. However, for illustrative purposes, the VW's statement of comprehensive income is presented here in its more recent format, extracted from a company's Annual Report for 2009. This is depicted in Table 1.4.

As might be seen, VW's profit after tax (which was reported in a lower part of the income statement) is repeated at the top of the statement of comprehensive income. In its consolidated income statement for 2008 (depicted in Table 1.1

Table 1.4 Consolidated statement of comprehensive income of Volkswagen Group for fiscal years 2008 and 2009

In EUR million	2008	2009
Profit after tax	4,688	911
Exchange differences on translating foreign operations:	2,421	1,920
<i>Fair value changes recognized in other comprehensive income</i>	<i>-1,445</i>	<i>917</i>
<i>Transferred to profit or loss</i>	<i>-</i>	<i>57</i>
Actuarial gains/losses	190	-860
Cash flow hedges:		
<i>Fair value changes recognized in other comprehensive income</i>	<i>1,054</i>	<i>683</i>
<i>Transferred to profit or loss</i>	<i>-1,427</i>	<i>-908</i>
Available-for-sale financial assets (marketable securities):		
<i>Fair value changes recognized in other comprehensive income</i>	<i>-330</i>	<i>200</i>
<i>Transferred to profit or loss</i>	<i>100</i>	<i>71</i>
Deferred taxes	145	216
Share of profits and losses of equity-accounted investments recognized directly in equity, after tax	-188	30
Other comprehensive income	-1,901	406
Total comprehensive income	2,787	1,317
Of which attributable to:		
<i>Shareholders of Volkswagen AG</i>	<i>3,310</i>	<i>1,138</i>
<i>Minority interests</i>	<i>-523</i>	<i>179</i>

Source Annual report of Volkswagen Group for fiscal year 2009

earlier in the chapter), the company reported total profit after tax of 4,688 EUR million. The same number appears as a first line item in its statement of comprehensive income and is then reconciled with the company's total comprehensive income, amounting to 2,787 EUR million. A difference between profit after tax and total comprehensive income amounted to 1,901 EUR million in 2008 and was labeled as other comprehensive income. A negative number reported in this line item means that the company's profit after tax, reported in its income statement, exceeded its total comprehensive income. An extent of that discrepancy is definitely significant. It also means that the company's total net wealth grew in 2008 by less than what could have been concluded from its income statement itself.

1.4 Content of Balance Sheet

1.4.1 What Is a Balance Sheet?

An income statement, discussed in a preceding section, informs about corporate earnings (meant as a difference between different categories of revenues and expenses) in a given period, such as year, quarter or month. Thus, the income statement offers an insight into business results in a specific period. In contrast, a **balance sheet**, which is also called a **statement of financial position**, is focused on a specific date, such as the end of a year or the end of a quarter. As such, the balance sheet is sometimes described as a “photograph” of the company’s wealth, taken at a given point in time.

The balance sheet discloses carrying (book) amounts of a given firm’s assets, liabilities and shareholders’ equity. It looks at the state of the company’s wealth from two complementary perspectives:

- **An assets side**—what types of assets a given entity owns and what their book values are.
- **A financing side**—what sources of funds the company uses in funding its assets.

Generally speaking, corporate assets may be funded from two broad classes of funds:

- A company’s own funds, called **shareholders’ equity** (as its name suggests, this is a capital channeled to firms by its owners).
- External funds, called **liabilities and provisions** (these funds are provided by non-shareholders and are expected to be repaid in the future).

By definition, both sides of the balance sheet must have equal total amounts, since all corporate assets must have some source of funding. This is illustrated on Chart 1.3.

On a “right-hand side” of their balance sheets, companies often report shareholders’ equity first (in an upper part of the balance sheet), followed by a presentation of individual classes of provisions and liabilities. However, from a

Long-term (non-current) and short-term (current) assets (i.e. assets that a company holds)		Equity and liabilities (i.e. sources of assets’ funding)
Total assets	=	Total liabilities and shareholders’ equity

Chart 1.3 Model balance sheet of a company (*Source Author*)

perspective of its economic substance, the equity reflects a hypothetical residual claim to corporate assets, on the part of the company's owners, after all creditors' claims (i.e. liabilities) are settled. Accordingly, in the following sections, the assets will be discussed first, followed by the liabilities and the shareholders' equity.

1.4.2 Classes of Assets

Assets controlled by any company may be classified as:

- Either **fixed assets**, also called long-term assets or noncurrent assets, or
- **Current assets**, also called short-term assets.

Fixed assets are expected to generate economic benefits in more than one operating cycle. Here **the operating cycle** is meant as a time interval from purchasing the raw materials or saleable merchandise to selling the finished goods or services or merchandise to customers. For instance, in the Volkswagen Group's case, the entire operating cycle consists of the following sequential phases:

- Purchasing raw materials and vehicle parts from suppliers.
- Processing raw materials and parts in manufacturing operations (e.g. assembling cars), during which the purchased materials and parts are gradually converted into work-in-progress inventories and ultimately into finished goods (i.e. vehicles that are ready to be sold).
- Selling the finished goods (vehicles ready to be used) to the company's customers, e.g. to car dealers or directly to their end users.

If Volkswagen Group purchases or manufactures an asset that it expects to use by longer than one operating cycle (e.g. a new production line, an office building or a patent for a new model of car), it classifies it in its balance sheet as a fixed (noncurrent) asset. In contrast, if a given asset is expected to be consummated within a one operating cycle (e.g. raw materials purchased to produce cars), it is classified as current asset.

It must be kept in mind, therefore, that a primary criterion for an inclusion of a given asset into one of these two categories (i.e. fixed assets or current assets) is **a function** served by that particular asset within a given firm, instead of the asset's physical features. Accordingly, a ceramic tiles furnace will be treated as a fixed (non-current) asset by a ceramic tiles manufacturer (which will use it in manufacturing tiles for many years), while an identical furnace will be classified as a current asset by an entity specialized in a wholesale sale of industrial machinery (which will intend to sell the furnace in few weeks).

1.4.3 Classes of Fixed (Non-current) Assets

As was noted above, the fixed assets are those corporate assets in which case the economic benefits are consummated by a given business in the course of multiple (more than one) operating cycles, that is in the long run. They include the following broad categories of assets:

- Property, plant and equipment (including assets used under lease contracts).
- Intangible assets.
- Long-term investments and long-term receivable accounts.
- Long-term prepaid expenses and deferred tax assets.

Property, plant and equipment (PP&E) include long-term physical (“touchable”) assets, used in a given company’s operations. Within their PP&E firms often include assets that they own, as well as those that are used under lease contracts. They may include, for instance, land, buildings (both used in manufacturing as well as for selling and administrative purposes), production machinery, warehousing equipment, transportation vehicles, hardware, etc. Such non-current assets may be:

- Either **ready to be used** (in which case they are depreciated, except for a land or
- **Under construction** (not yet subject to periodic depreciation charges).

Typically, the following types of expenditures are included in **initial amounts of PP&E**:

- A price paid for a given asset (to purchase it or to manufacture it).
- Other expenditures directly attributable to the asset, such as site preparation or costs of the asset’s transportation to the entity’s facilities.
- Borrowing costs (i.e. interest cost) stemming from financial debts, borrowed to fund purchasing or constructing the asset (however, these costs increase the asset’s initial amount only until it is ready for use, while later on they are expensed as incurred).

It must be noted, however, that only those PP&E-related expenditures, which are justified and reasonable, should be capitalized in a given asset’s initial carrying amount. For example, if the asset is damaged during its assembly or construction, then the resulting unplanned repair expenditures, incurred to bring it back to its original condition, should be expensed as incurred (i.e. should not be included in the asset’s initial book value).

Carrying amounts of those assets included in PP&E, that are ready to be used, are recurrently decreased by periodic **depreciation charges** (except for a land, which is not subject to depreciation). The depreciation is an operating expense and is based on a depreciable value of an asset, that is a difference between its initial (or revalued) carrying amount and its estimated residual value (i.e. an

amount expected to be recovered on liquidation of the asset, e.g. via its sale). The depreciation charges may take the following common patterns:

- A **straight-line depreciation**, where an amount of the depreciation expense stays the same in any period.
- An **accelerated depreciation**, where the depreciation charges have relatively high amounts in early periods and decrease gradually as the time goes by.
- A **natural depreciation**, where the amounts of depreciation charges in individual periods are linked to output volumes in those periods (i.e. the higher/lower the output volume, the higher/lower the depreciation expense).

An impact of depreciation charges on an asset value is illustrated in Example 1.1.

Example 1.1 Impact of depreciation charges on carrying amounts of PP&E.

A company has purchased a new production machine for 10,000 EUR. An estimated average useful life of such a kind of machinery is 15–20 years. However, the company's intention is to use this particular asset by about ten years and then to sell it (e.g. to a low-cost competitor, who will be able to continue using it by another 5–10 years). The company estimated that an average market price of 10 years old machines equals 30% of their initial values. The company uses the straight-line depreciation schedule.

Here an initial book value (a purchase cost) of the machine amounts to 10,000 EUR. Its expected market value after 10 years of use equals 3,000 EUR (i.e. 30% of the initial value). Consequently, the resulting depreciable amount equals 7,000 EUR. The company intends to use the asset by ten years, which implies an annual depreciation charge amounting to 700 EUR [= 7,000 EUR/10 years]. According to these estimates:

- The depreciation expense (that will decrease the company's operating profit as part of cost of sales), in each year of the asset use, will amount to 700 EUR.
- The machine's carrying amount (included within PP&E on the company's balance sheet) will decline by 700 EUR each year and will amount to 9,300 EUR after one year, 8,600 EUR after two years, and so on.

Note that the depreciation period (ten years) is based on the company's own expectations, regarding a time interval during which the asset will be in use, instead of the asset's expected full physical life (15–20 years). Note also that the subjectively estimated asset's residual value, after ten years (i.e. 30% of its initial value), may have significant impact on reported amounts of PP&E as well as on periodic depreciation charges (and earnings).

Source Author.

Items included in property, plant and equipment are subject to periodic depreciation charges since when they are ready to be used. In earlier periods, when a given asset is under construction, it is not yet depreciated. Instead, its carrying amount increases in tune with incurred construction expenditures. Thus, a significant and fast-growing relative amount of corporate assets under construction (as compared to total PP&E) is often followed by a significant increase in the depreciation expense (that occurs after the assets under construction become ready to use) and sometimes a fall of reported earnings.

From a point of view of reliability and comparability of reported accounting numbers, the most crucial aspects related to reporting PP&E include:

- A given company's approach toward treating its PP&E as ready to use vs. under construction—the longer a company delays reclassifying its PP&E from under construction to ready to use, the more inflated the company's reported earnings may be (because of delayed asset's depreciation charges).
- A given company's approach toward estimating useful lives of its assets—the shorter the assumed useful lives, the more conservative the reported earnings tend to be (because of higher periodic depreciation charges).
- A given company's approach toward estimating residual values of its depreciable assets—the lower the estimated residual values, the more conservative the reported earnings tend to be (because of higher periodic depreciation charges).
- Depreciation methods applied to items of PP&E—an accelerated depreciation is considered to be relatively conservative, while a natural method is deemed the most aggressive one.
- A given company's accounting policy toward expensing vs. capitalizing its expenditures incurred on a maintenance of its PP&E—only those expenditures incurred during a given asset's lifetime, that increase its economic value (e.g. by improving an output quality or by boosting a capacity), should increase the asset's carrying amount (while other asset-related expenditures, particularly routine maintenance costs, should be expensed as incurred).
- A given company's policy toward revaluing its PP&E to fair values—IFRS permit periodical revaluations of tangible fixed assets to their estimated fair values, that may be aggressively used by some managers to aggressively boost carrying amounts of their companies' total assets and equities (as a result, a historical cost model for reporting PP&E is deemed more conservative than a revaluation model).

Intangible assets, often abbreviated to **intangibles**, are long-term non-financial assets without a physical substance (“untouchable”). They may include, for instance, brands, patents, software licenses, capitalized development costs, newspaper titles, copyrights, product formulas, etc. From an accounting point of view they may be classified as:

- Either having an indefinite (indeterminable) useful life (e.g. brands or goodwill) or
- Having definite useful life (e.g. patent valid for twenty years).

Under IFRS the intangible assets with definite useful lives are subject to periodic amortization, which is similar to a depreciation of PP&E. In contrast, the intangibles with indefinite useful lives are not amortized. Instead, they are kept in books at their historical cost and periodically (at least once a year) tested for an impairment.

From an analytical point of view, the intangible assets may also be classified as:

- **Independent from a business as a whole**, which means that they might be separated from a company and sold or rented to other entities (e.g. brands, patents, software licenses, newspaper titles, customer databases, etc.).
- **Not separable from a given business**, which means that they exist only within that particular company (e.g. customer relationships or goodwill).

It must be kept in mind that except for capitalized development costs (discussed with more details below), under IFRS only those intangibles may be capitalized on a given company's balance sheet that is purchased from other parties (either individually or as part of a business combination). Unlike in the case of PP&E, where expenditures incurred on creating new assets are treated as investments and capitalized in a balance sheet, the expenditures on creating internally developed intangibles (such as corporate brand or customer relationships) are expensed as incurred. In some circumstances, it may significantly erode an intercompany comparability of reported financial statements, since those firms that grow mainly by acquiring other entities may include intangibles purchased via such takeovers within their assets disclosed in the balance sheet. In contrast, companies that tend to develop intangibles internally, expense their intangibles-related expenditures as incurred (Healy et al., 2002; Lev & Zarowin, 1999; Wallman, 1995).

Under IFRS, capitalized development costs constitute an only exception from expensing (as incurred) the intangibles-related expenditures. Many companies regularly invest significant amounts of money on research and development (R&D) projects, such as on new drugs, business software or other product improvements. Volkswagen Group, for instance, continually invests in designing new models of cars as well as upgrading its older models. In contrast to most other accounting systems (e.g. U.S. GAAP), under IFRS some of such R&D expenditures are treated as investments and capitalized in a balance sheet as intangible assets (instead of being immediately expensed in an income statement). In later periods, after a given R&D project is successfully completed, those previously capitalized development costs are amortized (similarly as PP&E). According to IFRS 38, any R&D project conducted by a company must be divided into its research and development phases. All expenditures incurred in a research phase are expensed as incurred (i.e. reported as

operating costs in an income statement), while all development expenditures are capitalized in a balance sheet (and then amortized).

A key and problematic issue here is a distinction between a given project's research phase and its development phase. **Research** is defined as an original and planned investigation, undertaken with a prospect of gaining new scientific or technical knowledge and understanding. Generally speaking, a project is considered to be still in its research phase when it is at such an early stage, that it is not yet possible to make any reasonable predictions of probabilities of its technical or commercial success or failure. In contrast, **development** is defined as an application of research findings to design new or substantially improved materials, devices, products, processes, systems or services, before the start of commercial production or use (e.g. working on a prototype of a new model of car or testing the newly developed vaccine).

In practice, a distinction between research and development phases may be very fuzzy and subjective and consequently prone to accounting manipulations. Firms that spend significant amounts of funds on their R&D projects may be tempted to aggressively accelerate a reclassification of their individual projects from research to development phase (in order to capitalize more expenditures, instead of expensing them as incurred). An another subjective and problematic issue is an amortization of capitalized development costs. Unlike in the case of PP&E, where some reasonable ranges of expected useful lives can usually be determined (based, for example, on an average physical life of a given type of a machine or building), making any reasonable estimates of an expected useful life of a new software or a new model of car may be next-to-impossible (and thus heavily subjective).

A specific type of an intangible asset is **goodwill**, that results from business combinations (mergers or acquisitions of other businesses). Goodwill is typically recognized when one firm obtains a control over another one, by purchasing a controlling interest (usually above 50%) in its equity, for a price that exceeds an acquirer's share in a fair value of a target company's net assets (defined as a difference between fair value of the target's total assets and fair value of its liabilities). In other words, goodwill reflects an excess of an economic value of a target company's business as a whole (i.e. its value as an organized business) over a sum of estimated fair values of the target's net assets (Alfredson et al., 2009; Giroux, 2006). A computation of goodwill in a hypothetical business combination is illustrated in Example 1.2, on a basis of a very simple transaction whereby an acquirer obtains 100% equity interest in an another company, for a price paid in cash. The computation of goodwill resulting from a business combination is more complex when a control is obtained in return for a non-cash asset, such as the acquirer's shares (which must also be valued to fair value), and when a control is obtained by purchasing less than 100% share in the target's equity (since in such a case also non-controlling interests in the target's equity must be valued). However, a more detailed discussion of intricacies of an accounting for business combination lies beyond a scope of this textbook.

Example 1.2 A computation of goodwill in a business combination when an acquirer obtains 100% interest in a target company's equity.

A company named Acquirer invested in 100% of shares in equity of another entity, named Target. A price that the Acquirer paid to the Target's previous shareholders amounted to 100,000 EUR. On an acquisition date the Acquirer revalued the Target's net assets to their estimated fair values (from their prior book values). The Target's net assets look as follows:

Target's net assets at carrying amounts (in Target's books)		Target's net assets at estimated fair values	
Fixed assets	30,000	Fixed assets	35,000
Current assets	50,000	Current assets	65,000
Total assets (1)	80,000	Total assets (1)	100,000
Total liabilities (2)	40,000	Total liabilities (2)	40,000
Net assets [= (1) – (2)]	40,000	Net assets [= (1) – (2)]	60,000

Goodwill is calculated as a difference between a price paid for a controlling interest in the Target's equity and the Acquirer's proportional share in a fair value of the Target's net assets. Here, the Acquirer paid 100,000 EUR for 100% share in the Target's equity. Consequently, the goodwill recognized by the Acquirer in its consolidated balance sheet amounts to 40,000 EUR (i.e. the price paid, amounting to 100,000 EUR, less the Target's total net assets, at their estimated fair values amounting to 60,000 EUR).

Source Author.

Under IFRS (as well as under U.S. GAAP) the goodwill is classified as an intangible asset with an indefinite useful life. Accordingly, it is not subject to periodic amortization. Instead, it is regularly (at least once a year) tested for an impairment. In contrast, under some national accounting standards, the goodwill is recurrently amortized.

Generally speaking, in a financial statement analysis the intangible assets are considered as elusive and "soft" assets, which means that they tend to be featured by Barwise et al. (1989), Chan et al. (2001), Kothari et al. (2002), Penman (2009), Schauten et al. (2010):

- Relatively high uncertainty of future returns (as compared to most tangible assets).
- Relatively poor (as compared to most other assets) marketability, meant as a possibility to be quickly sold or rented if needed.
- Relatively unreliable and unverifiable (as compared to most other assets) carrying amounts (since it is generally much more difficult, also for auditors, to verify and estimate fair market values of unique assets such as brands or customer relationships, as compared to e.g. PP&E).

- Relatively high (as compared to most other assets) susceptibility to accounting manipulations (e.g. by overstating reported carrying amounts).

From a point of view of reliability and comparability of corporate financial statements, the most crucial aspects related to accounting for intangible assets include:

- A given company's approach toward capitalizing its development expenditures—the sooner the company reclassifies its R&D projects from research to development phase, the more inflated its reported earnings may be (because of the higher capitalized, and the lower expensed, R&D expenditures).
- A given company's approach toward estimating useful lives of its intangibles—the shorter the assumed useful lives, the more conservative reported corporate earnings tend to be (due to larger periodic amortization charges).
- A given company's approach toward revaluing net assets acquired in its business combinations—estimates of fair values are often very subjective (particularly in case of specialized and unique assets, such as heavy machinery) and consequently deliberate overstatements or understatements of their values may distort an acquirer's post-merger consolidated earnings.
- A given company's approach toward testing its intangible assets for impairments—the impairment testing of intangibles is similar in nature to valuing them, which makes it prone to the same reliability problems as in the case of asset revaluations.

Another broad categories of noncurrent assets are **long-term investments** and **long-term receivables**. Typically they include financial and non-financial assets, in which case the economic benefits are expected to be earned in the long run and which often are not related to the company's core business operations. They may include, for example:

- Long-term corporate or Treasury bonds, which a given company intends not to sell in a near future.
- Shares in equity of other entities (other than controlled subsidiaries), which a given company intends not to sell in a near future and which are accounted for either at their historical costs or by equity method.
- Investment properties, i.e. real-estate assets held for purposes of generating economic benefits from a rental or from an appreciation of market value (or both) which are not used by a given company in its core business operations.
- Long-term receivables from loans lent to other parties, e.g. employees, customers or other enterprises.

From an analytical point of view, it is important to be aware that individual assets, included within long-term investments and long-term receivables, may have

differing and non-comparable measurement bases, as well as varying impacts on corporate reported earnings. For instance:

- Investment properties may be reported at their current estimated fair values, with resulting gains or losses from revaluations included in a period's profit or loss (often within either other operating income or other operating expenses).
- Alternatively, the investment properties may be held at their historical costs, if it is not feasible or practicable to do regular revaluations of their fair values.
- Shares in non-public entities (i.e. companies not listed on any stock exchanges), over which a given company has neither control nor a significant influence (e.g. because of holding less than 20% equity interest), may be reported at their historical costs.
- Shares in public entities (listed on stock exchanges), over which a given company has neither control nor a significant influence, may be reported at their current fair values, with resulting gains or losses from revaluations included either directly in equity or in a period's profit or loss.
- Shares in equity of other entities, that are under a given company's significant influence (e.g. because of holding more than 20% but less than 50% interest in equity), are reported by an equity method of accounting.

Although carrying amounts of individual assets reported as long-term investments and receivables may be non-comparable (due to differing measurement bases), some of these assets are considered to be featured by relatively good marketability (as compared to PP&E and intangible assets). This relates particularly to investment properties, some long-term receivables (of a good credit quality) and shares of listed companies. They often may be sold and cashed relatively quickly, if a company needs money to increase its liquidity.

Long-term prepaid expenses are capitalized expenditures that will be treated as costs and expensed in an income statement in future periods (more than one year from a reporting date). A simple example is a rental fee paid in advance for several years. For instance, a company may rent an office building for five years and pay to its owner a total rental fee, amounting to 100,000 EUR, in advance. Although the company's cash balance has diminished by 100,000 EUR, a full payment should be treated as an expense (in an income statement) in a period when it is incurred. Instead, only 20,000 EUR (i.e. one fifth of an entire amount) should be expensed in the first year, while a remaining 80,000 EUR should be deferred to future periods (to the remaining four years). Generally speaking, in a financial statement analysis such long-term prepaid expenses are considered a kind of "soft" assets, featured by a relatively poor marketability (meant as a possibility to be quickly sold or rented if needed).

Deferred tax assets contain two tax-related classes of items:

- Likely economic benefits stemming from past temporary book-tax differences, expected to reverse in a future.

- Likely economic benefits offered by tax-loss carry-forwards, stemming from past income tax losses (i.e. negative prior taxable income), expected to be tax-deductible in a future.

Accounting for deferred taxes is an advanced topic that extends beyond a scope of this textbook. However, in a financial statement analysis, the deferred tax assets, similarly as intangibles and long-term prepaid expenses, are considered as “soft” assets, featured by a relatively poor marketability.

Table 1.5 presents an extract from the consolidated balance sheet of Volkswagen Group, depicting its fixed (noncurrent) assets, as at the end of fiscal years 2007 and 2008.

As may be seen, VW reports ten line items of its consolidated noncurrent assets. However, for a financial statement analysis, they may be more conveniently grouped into the following relatively homogenous classes:

- Intangible assets.
- PP&E (including property plant and equipment as well as leasing and rental assets).
- Long-term investments and receivables (including investment property, equity-accounted investments and other equity investments, financial services receivables, other receivables and financial assets, noncurrent tax receivables).
- Deferred tax assets.

Table 1.5 Consolidated noncurrent assets of Volkswagen Group, as at the end of fiscal years 2007 and 2008

In EUR million	Note	2007	2008
Noncurrent assets			
Intangible assets	12	6,830	12,291
Property, plant and equipment	13	19,338	23,121
Leasing and rental assets	14	8,179	9,889
Investment property	14	152	150
Equity-accounted investments	15	7,795	6,373
Other equity investments	15	548	583
Financial services receivables	16	27,522	31,855
Other receivables and financial assets	17	2,416	3,387
Noncurrent tax receivables	18	952	763
Deferred tax assets	18	3,109	3,344
		76,841	91,756

Source Annual report of Volkswagen Group for fiscal year 2008

The company's total noncurrent assets increased in 2008 by 19.4% (from 76,841 EUR million to 91,756 EUR million). The most material categories of VW's fixed assets are:

- Intangible assets, with a 13.4% share and a 80% y/y growth in 2008.
- Property plant and equipment, together with leasing and rental assets, with a 36% combined share and a 20% y/y growth in 2008.
- Financial services receivables (which due to their large carrying amounts are considered individually here, not as a component of all long-term investments), with a 34.7% share and a 15.7% y/y growth in 2008.

Altogether, these three categories made up 84.1% of the VW's total noncurrent assets, as at the end of fiscal year 2008. A significant share of PP&E in total noncurrent assets seems entirely logical, in light of a profile of the VW's core business operations (i.e. manufacturing of vehicles). Likewise, a moderate share of intangible assets in a breakdown of the company's total noncurrent assets seems rather justifiable (although from a balance sheet itself we cannot obtain any knowledge about what types and quality of intangibles a company owns). In contrast, such a significant share of financial services receivables may seem somewhat surprising. As the name suggests, these are some receivable accounts related to the VW's financial services. However, VW is a car manufacturer, instead of a financial services company. Therefore, it could be expected to report significant trade receivables (within current assets), rather than long-term financial services receivables. Such a material share as well as a monetary amount of the company's financial services receivables call for a more detailed scrutiny of this item, aimed at investigating:

- What exactly those receivables are and what their origin is.
- Whether it is justified for a car manufacturer to report such a significant amount of receivables related to financial services.
- How these financial services receivables should be treated in a financial statement analysis.
- What the monetary amounts as well as time-series trends of those receivables may tell about the company's financial situation.

The VW's balance sheet alone does not offer any plausible answers to the issues raised above. However, the second-to-left column of Table 1.5 informs that a more detailed information, about the company's financial services receivables, may be found in Note 16 to its financial statement. Accordingly, this note will be investigated in Chapter 2. Likewise, it is unclear what the company means by leasing and rental assets, without referring to respective notes to its financial statements. There may be two possibilities here:

- Either these are assets owned by other entities (lessors) but used by Volkswagen Group under lease contracts (or rental contacts similar in substance to the lease), or
- These are assets owned by the company itself but used by other entities under lease contracts (or rental contacts similar in substance to the lease).

In the former case, the leasing and rental assets would most probably include items of PP&E that the company leases and uses for manufacturing, distributive or administrative purposes. In the latter case, these could be, for example, Volkswagen own vehicles (but also other assets owned by the company) leased out to other entities.

The other line items of the company's noncurrent assets inform us that:

- The company does not own any significant (in monetary terms) investment properties, so their fair value estimates should not significantly affect its reported earnings.
- Although at the end of fiscal year 2008 equity-accounted investments constituted less than 7% of Volkswagen Group's total noncurrent assets, a period-to-period change in their monetary amount (that fell by 1,422 EUR million) could have a potentially material impact on the company's earnings, reported for 2008.
- Other noncurrent assets combined (i.e. other equity investments, other receivables and financial assets, noncurrent tax receivables and deferred tax assets) constituted less than 9% of the VW's total noncurrent assets, as at the end of fiscal year 2008 (so their impact on the company's financial situation seems at most limited).

1.4.4 Classes of Current (Short-Term) Assets

Current assets are those corporate assets in which case economic benefits are expected to be consummated by a company in a course of its single operating cycle. They include:

- Inventories.
- Short-term receivable accounts (including short-term debt investments).
- Short-term equity investments.
- Short-term prepaid expenses.
- Cash and cash equivalents.
- Assets held for sale.

Inventories include physical assets, purchased from other entities or manufactured by a company, with an intention to sell them, either without any further

processing (in case of merchandising companies, such as retail or wholesale businesses) or after processing by a company (in case of manufacturing and some service companies).

From an analytical point of view, the inventories may be classified into four main categories:

- Non-processed inventory: raw materials and supplies.
- Semi-processed inventory: work-in-progress (also called work-in-process).
- Processed inventory: finished goods and merchandise.
- Prepayments for inventories ordered.

Raw materials are held by manufacturing and some service companies and are intended to be used in a production of their finished goods or services. For instance, in VW's case, they may include plastics, metals, spare parts, oils, screws, tires, glass and so on, which will be used in its manufacturing processes. **Supplies** are also inventories that are not intended to be sold. However, in contrast to raw materials, they are usually intended to be used in a company's operations other than manufacturing. They may include, for example, inventories consummated by a given company's administrative or selling departments (e.g. printing paper, water and soap for employees, inventory of a fuel to a fleet of cars used by sales representatives, etc.). Raw materials and supplies are held within this category until they are either forwarded to manufacturing processes (raw materials) or consummated (supplies).

Work-in-progress (or **work-in-process**) means goods or services that have already been partially processed by a company (unlike raw materials) but are not yet ready to be sold. For example, if manufacturing of a car takes, say, six weeks on average (from consuming raw materials to obtaining a completed new car), then the partially produced cars, after three or four weeks in production, are classified as work-in-progress. These inventories are not yet ready to be sold, since they cannot be used by their end users.

Finished goods are those inventories of manufacturing businesses that have already gone through all production operations. Their manufacturing processes have been completed and thus they are ready to be sold and then used by their users. Inventories are held within this category since the moment when they leave manufacturing departments until they are sold (when their carrying amount is transferred from inventory in a balance sheet to cost of sales in an income statement). **Merchandise** is a counterpart of finished goods in case of retail or wholesale businesses. For instance, when companies like Tesco or Walmart purchase consumer goods, to put them on shelves and offer in their stores, they typically do not intent to perform any further processing of those purchased items. Accordingly, from their point of view those inventories constitute their "finished goods", from when they are bought. Thus, they typically label such inventories as the merchandise.

A final class of inventories captures **prepayments**. When a given firm orders inventories from its suppliers (regardless of whether these are raw materials, supplies or merchandise) and transfers any money in advance, then those prepaid amounts are included in its inventories (despite the fact that the company has not yet been supplied the physical inventories). Later on, when those ordered products are delivered to the company, its earlier prepayments are reclassified to a respective category of physical inventories (i.e. raw materials, supplies or merchandise).

The inventories are initially recorded in books at their historical costs. This means that:

- Carrying amounts of raw materials, supplies and merchandise are based on their purchase prices, increased by legitimate expenses incurred on bringing them to their current condition and location (such as transportation costs, insurance fees or costs of packaging and repackaging).
- Carrying amounts of work-in-progress inventories include their direct manufacturing costs (such as raw materials and direct labor consumed), as well as their legitimate indirect manufacturing overheads (such as allocated depreciation, electric energy consumed by production departments or indirect labor), incurred to date.
- Carrying amounts of finished goods include their direct manufacturing costs, as well as their legitimate indirect manufacturing overheads, incurred from when raw materials are forwarded to production departments until the finished goods are completed (are ready to be sold).

In case of work-in-progress inventories as well as finished goods, carrying amounts should include only that part of the indirect manufacturing overheads that corresponds to a typical (normal) levels of a capacity utilization. In contrast, indirect manufacturing costs that reflect an unused output capacity (which usually occurs when production volumes are temporarily abnormally low) should be expensed as incurred (instead of being capitalized in carrying amounts of inventories). An illegitimate capitalization of excess indirect unit manufacturing costs in a carrying amount of inventory constitutes one of the common techniques of overstating earnings (Welc, 2020).

In later periods (i.e. after an initial recognition) the individual items of inventories should be reported in a corporate balance sheet at either their **historical costs** (i.e. for how much they have been purchased or manufactured) or **net realizable values** (i.e. for how much they could be currently sold, less any costs-to-sell), whichever is lower (with some exceptions discussed below). This principle constitutes a manifestation of a conservative approach to reporting assets and earnings. If realizable values of inventories (e.g. their current market prices) exceed their historical costs, then those inventories should be reported at their historical costs. In contrast, when the realizable values fall below the historical costs (which is called an **impairment of inventory**), then carrying amounts of inventories should be written down to their estimated realizable values, with a loss resulting from such a revaluation reported in an income statement (usually as other operating

expenses). Delays in writing down the impaired inventories constitute one of the common techniques of overstating earnings (Welc, 2020).

Some accounting systems (including IFRS) allow for exceptions from the lower-of-cost-and-net-realizable-value principle, discussed above. These exceptions relate primarily to those commodity-like inventories that are featured by easily observable, objective and reliable market prices, such as some agricultural products or mineral resources. In such cases, after satisfying some required conditions, inventories may be periodically revalued to their fair values (based on observable market prices), with resulting revaluation gains and losses reported in an income statement. It is important to note that in such circumstances a recognition of a gain from holding inventories with rising market prices may be accelerated and reflected in the income statement before the inventories are sold (unlike in case of inventories accounted for in accordance to the lower-of-cost-and-net-realizable-value principle, under which profits are recognized only when inventories are sold).

From a point of view a financial reporting quality, the most crucial issues related to accounting for inventories include:

- A given company's approach toward capitalizing (vs. expensing as incurred) its costs of unused capacity—the higher portion of costs of the unused capacity a company capitalizes in carrying amounts of its inventories (instead of expensing them through an income statement), the more overstated its current earnings and inventories may be (increasing a probability of future inventory write-downs).
- A given company's approach toward physical inventory counts—the more regular and rigorous the physical inventory counts (which are required by most accounting standards), the lower a risk of reporting non-existing (e.g. stolen) or damaged inventories.
- A given company's approach toward writing down its impaired inventories—illegitimately long delays in writing down impaired inventories or unreasonably optimistic estimates of their realizable values result in overstated earnings and carrying amounts of inventories (increasing a probability of future inventory write-downs).

In case of manufacturing and merchandising businesses, the abuses in accounting for inventories constitute one of the main areas of a “creative accounting” and earnings manipulations (Welc, 2020).

Short-term receivable accounts (also called **short-term receivables** or **current receivables**) represent future monetary inflows, expected to be received from other entities or persons, in the course of the next twelve months (or, in case of trade receivables, within one operating cycle, if it is longer than one year). From an analytical point of view, they may be categorized as:

- **Operating receivables**, that stem from a given company's recurring core business activities and are expected to demonstrate a continuous turnover (i.e. to rise/fall in tune with growing/contracting sales). They typically include:

- trade receivables, resulting from sales with deferred payment terms granted to customers (credit sales),
 - some receivables from suppliers (e.g. stemming from accrued but not yet collected purchase rebates, linked to volumes of purchases of raw materials of merchandise from suppliers),
 - some tax-related receivables (e.g. resulting from tax rebates or tax reliefs accrued but not yet collected), related to the company's recurring operations,
 - some receivables from derivative instruments (e.g. currency forward contracts), resulting from the company's actions aimed at hedging its operating cash flows (e.g. hedging against a foreign currency risk that affects its trade receivables, stemming from export sales settled in foreign currencies).
- **Non-operating receivables**, that do not stem from core business activities and as such are not expected to recur regularly and predictably, e.g.:
 - receivables from short-term investments in corporate or Treasury bonds or bills (they may also include long-term financial instruments, such as 10-year bonds, if a given company intends to sell them on the market in a near future, instead of holding them to maturity),
 - receivables from loans granted to other entities or private persons (other than for financing customer purchases of the company's products or services),
 - employee-related receivables (e.g. receivables from short-term loans granted to employees),
 - some receivables from suppliers (e.g. resulting from agreed-upon but not yet collected penalty fees for delays in deliveries),
 - some tax-related receivables (e.g. resulting from tax reliefs accrued but not yet collected, related to company's non-recurring operations),
 - current portion (i.e. collectible in the course of the following twelve months) of payments related to long-term receivable accounts (e.g. current portion of a five-year loan granted to an employee),
 - some receivables from derivative instruments (e.g. currency futures), resulting from the company's speculative investments (i.e. unrelated to its hedging activities),
 - receivables from government grants,
 - receivables from insurance compensations.

A distinction between operating and non-operating short-term receivables is very relevant for a financial statement analysis and particularly for simulating a given company's future liquidity and cash flows. This is so because the operating receivables are expected to stay positively correlated with the company's revenues and as such they are expected to "roll-over", as long as the company continues its operating activities (i.e. they tend to continue growing if the company continues increasing its sales, and to fall in tune with falling sales). In contrast, the non-operating receivables tend to "live on their own", in a sense that their changes from period to period (e.g. repayments) typically do not follow changes of a scope of the company's core business operations.

The receivable accounts (including short-term debt investments) are usually initially recorded in books at their historical costs (there are, however, some exceptions from this principle, when the receivables are initially recognized at their estimated fair values). For instance, if a company sells its products for a net price (i.e. after subtracting any rebates and value-added or sales taxes) of, say, 1,000 EUR, and grants to its customer a 30-day deferred payment term, then initially (on a transaction day) it records a net sales amounting to 1,000 EUR (in its income statement) and correspondingly raises a carrying amount of its trade receivables by the same 1,000 EUR. However, under some accounting standards (including IFRS), when a deferred payment term is relatively long (e.g. more than 180 days), then sales revenues and accompanying trade receivables are required to be booked at their discounted values, lower than their nominal monetary amounts (but this is rarely met in practice).

In the following periods (i.e. between an initial recognition of a receivable account and its collection), short-term receivables, depending on their type, may have varying and non-comparable measurement bases, as well as differing impacts on reported corporate earnings. For example:

- Short-term debt investments with observable market prices (e.g. Treasury bonds), that are intended to be sold on the market before their maturities, may be reported at their current market values, with resulting gains or losses from their periodic revaluations included in a period's profit or loss (usually within financial income).
- Alternatively, other short-term debt investments may be intended to be held to maturity, and if they become redeemable in the course of the following twelve months, they may be accounted for by a so-called amortized cost (which is unrelated to current swings of their market prices).
- Trade receivables or short-term employee-related receivables are usually carried at their historical costs, adjusted for their estimated impairment write-downs (if any) as well as reversals of prior write-downs, with the resulting losses from write-downs and gains from their reversals included in a period's other operating expense and other operating income, respectively.

Although carrying amounts of individual classes of short-term receivables may be incomparable (due to varying measurement bases), most of these assets are usually considered to be featured by a relatively easy marketability (as compared to e.g. inventories). This relates particularly to trade receivables, stemming from prior sales to customers with a good credit quality, as well as to short-term investments in debt instruments traded on liquid markets. They usually may be cashed (collected or sold) relatively quickly and easily, if a given company needs money to increase its liquidity.

However, some classes of short-term receivables are featured by their high vulnerability to subjective judgments and accounting manipulations. This relates particularly to those receivables in which case write-downs (impairments of value) must be subjectively estimated, such as trade receivables, loans granted to other

entities and investments in debt instruments not listed on any liquid markets. Furthermore, many techniques of inflating reported earnings, particularly via overstated or prematurely recognized sales revenues (e.g. by reporting fictitious sales), are related to short-term receivables. Consequently, from a perspective of a financial statement reliability, the most crucial issues, related to accounting for receivable accounts, include:

- A given company's approach toward a revenue recognition—the more aggressively (e.g. prematurely or fraudulently) the company recognizes sales revenues in its income statement, the more overstated its earnings and receivable accounts tend to be.
- A given company's approach toward writing down its impaired receivable accounts—illegitimately long delays in writing down impaired receivables or unreasonably optimistic estimates of their realizable values result in overstated earnings and carrying amounts of receivable accounts (increasing a probability of future impairment write-downs).

Several common techniques of overstating earnings by overstating receivable accounts are discussed with details in books devoted to financial accounting misstatements (Welc, 2020).

Another category of current assets captures **short-term equity investments**. They usually include shares in equity of other firms, typically listed on stock markets (and less commonly non-listed companies), intended to be sold in a near future. Similarly as in a case of short-term debt investments, if their market prices are observable and are formed on the actively traded (liquid) markets, and if they are intended to be sold on the market in a near future, they are reported at their current market values (with resulting gains and losses from their periodic revaluations included in a period's profit or loss, usually in financial income).

Short-term prepaid expenses represent capitalized prior expenditures that will be treated as costs in the following twelve months. Accordingly, they are similar in nature to long-term prepaid expenses, except for an expected timing of their expensing in an income statement. Common examples of the short-term prepaid expenses include:

- Rental fees paid in advance for the whole year.
- Asset's insurance fees paid in advance for the whole year.
- Regular expenditures on a maintenance or repairs of a manufacturing machine, that are incurred once a year (for instance, during a seasonal trough of an output volume) but bring their economic benefits throughout the entire year (when the output is manufactured with the use of that machine).
- Recurring expenditures on a mandatory safety testing of fixed operating assets (e.g. airplanes or cars), that are incurred once a year but bring their economic benefits throughout the entire year.

Similarly as in a case of long-term prepaid expenses, in a financial statement analysis the short-term prepaid expenses are deemed “soft” assets, featured by a relatively poor marketability (meant as a possibility to be quickly sold or rented, when needed).

Cash and cash equivalents are defined as cash on hand, demand bank deposits and short-term, highly liquid investments that are readily convertible into known amounts of cash and which are subject to an insignificant risk of changes in value. Examples of cash equivalents include short-term money market securities and short-term bank deposits.

Assets held for sale, in a nutshell, include assets that a given company has ceased to use in its operating activities and which are intended to be disposed of. Often, this line item captures assets previously reported as noncurrent ones (in prior periods, when they were used in operations), that were later on reclassified into this category. Most accounting standards require a fulfillment of some conditions, for an item to be reclassified from noncurrent assets to assets held for sale. For instance, under IFRS the following conditions must be met for an item to be reported as held for sale (IFRS 5):

- Management is committed to a plan to sell.
- The asset is available for immediate sale.
- An active program to locate a buyer is initiated.
- The sale is highly probable within twelve months of classification as held for sale.
- The asset is being actively marketed for sale at a sale price reasonable in relation to its fair value.
- Actions required to complete the plan indicate that it is unlikely that plan will be significantly changed or withdrawn.

Noncurrent assets classified as held for sale (and as such included in current assets) are no longer subject to periodic depreciation charges. Instead, they are reported at the lower of carrying amount and fair value less costs to sell. Therefore, for an analyst it is important to be aware that some firms may aggressively abuse reclassifications of their fixed assets from noncurrent ones (where they are depreciated) to assets held for sale (where they are no longer subject to depreciation), by pursuing artificial activities aimed at artificially satisfying the above conditions for the reclassification. A resulting reduction in a depreciation expense may artificially boost reported earnings. Thus, if a given company reports assets held for sale with a suspiciously high share in its total assets, then the underlying reasons, a nature of these assets and a probability of their disposal should be scrutinized diligently (based on a respective note).

Table 1.6 contains an extract from consolidated balance sheet of Volkswagen Group, depicting its current (short-term) assets as at the end of fiscal years 2007 and 2008. As might be seen, VW reports eight line items of its consolidated current assets. For a financial statement analysis, they may be preliminarily grouped into the following relatively homogeneous classes:

Table 1.6 Consolidated current assets of Volkswagen Group, as at the end of fiscal years 2007 and 2008

In EUR million	Note	2007	2008
Current assets			
Inventories	19	14,031	17,816
Trade receivables	20	5,691	5,969
Financial services receivables	16	24,914	27,035
Other receivables and financial assets	17	6,653	10,068
Current tax receivables	18	500	1,024
Marketable securities	21	6,615	3,770
Cash and cash equivalents	22	10,112	9,474
Assets held for sale	23	–	1,007
		68,516	76,163

Source Annual report of Volkswagen Group for fiscal year 2008

- Inventories.
- Short-term receivables (including trade receivables, financial services receivables, other receivables, financial assets and current tax receivables).
- Short-term investments (including marketable securities).
- Cash and cash equivalents.
- Assets held for sale.

The above categorization is only a preliminary one and it should be checked with the use of a relevant information, extracted from respective notes to the company's balance sheet. This is so because the balance sheet itself does not offer an information detailed enough to enable a definite categorization. For instance, there are two line items that include some financial instruments. The first one is "*Other receivables and financial assets*" and the another one is "*Marketable securities*". From the face of the balance sheet, we cannot make any inferences about what types of financial assets (e.g. debt vs. equity investments) are included in these line items. Thus, it is justified to study a content of the relevant notes (i.e. Notes 17 and 21). Likewise, there is no any line item on the VW's balance sheet that refers to its short-term prepaid expenses. It does not necessarily mean that the company does not have any such capitalized expenses, since they may be included within some other line item.

The company's total current assets increased in fiscal year 2008 by 11.2% (i.e. from 68,516 EUR million to 76,163 EUR million). The most significant categories of VW's current assets were:

- Inventories, with their 23.3% share and 27% y/y growth in 2008.
- Short-term financial services receivables, with their 35.5% share and 8.5% y/y growth in 2008.

- Other receivables and financial assets, with their 13.2% share and 51.3% y/y growth in 2008.
- Cash and cash equivalents, with their 12.4% share and 6.3% y/y decline in 2008.

Altogether, those four classes made up 84.4% of the VW's total current assets, as at the end of fiscal year 2008. A significant share of inventories in total current assets seems entirely logical, in light of a profile of the VW's core business operations (i.e. manufacturing of vehicles). Likewise, a material share of the combined liquid financial assets (cash and cash equivalents, other receivables and financial assets), in a breakdown of the company's total current assets, seems rather justifiable and reflecting the company's liquidity management. However, similarly as in the case of noncurrent assets, such a high share of financial services receivables may seem somewhat surprising, for a car manufacturer (and not a financial services company). Typically non-financial firm are expected to report significant trade receivables, rather than financial services receivables. However, in the Volkswagen Group's case, in both fiscal years 2007 and 2008 the reported carrying amount of the short-term financial services receivables was more than fourfold larger than the reported value of its trade receivables (and combined amounts of noncurrent and current financial services receivables were more than nine times more valuable than the trade receivables). Clearly, such a significant share as well as a monetary amount of the company's total financial services receivables call for a more detailed scrutiny of this asset category, based on a respective note (i.e. Note 16).

The other line items of the company's current assets inform us that:

- The company does not own any significant (in monetary terms) current tax receivables.
- The company does not report any significant (in monetary terms) assets held for sale, so their suspended depreciation charges seem not to pose any concern.
- Although at the end of fiscal year 2008 the VW's marketable securities made up less than 5% of its total current assets, a period-to-period change in their carrying amount (that fell by 2,845 EUR million) could have a potentially material impact on its earnings, reported for 2008 (consequently, it is recommendable to scrutinize an information offered in Note 21).

1.4.5 Classes of Liabilities

Liabilities represent obligations to other entities and persons. Colloquially, they are meant as external sources of capital, borrowed from other parties. Regardless of their types, their common feature is that they will have to be settled in future periods, by sacrificing some of a given company's resources (e.g. by paying cash or by transferring some non-financial assets to creditors). Unlike shareholders'

equity (discussed later in the chapter), the creditors' claims against a firm, resulting from its liabilities, are generally unconditional on the company's financial results. Thus, generally speaking, corporate liabilities are "payable" regardless of whether a given business is profitable (and generates positive cash flows) or not.

There exist various classes of corporate liabilities. However, for a financial statement analysis, it is important to understand that accounting definitions of liabilities may differ from the economic ones. Some items, reported in a balance sheet as liabilities, may not have a substance of an obligation (although accountants classify them as liabilities), while at the same time there may exist some pure economic obligations that are not reported in a balance sheet. Consequently, a diligent financial statement analysis often requires substantial time and effort, devoted to scrutinizing the nature and amounts of corporate liabilities.

From an analytical point of view, all corporate liabilities may be classified according to the following six criteria (among others):

- Classification by an origin:
 - Operating liabilities (payables),
 - Financial liabilities.
- Classification by a balance-sheet presence:
 - On-balance sheet liabilities,
 - Off-balance sheet liabilities.
- Classification by a relevance of subjective assumptions and estimates:
 - Document-backed liabilities,
 - Provisions for liabilities.
- Classification by a probability of occurrence:
 - Liabilities and provisions,
 - Contingent liabilities.
- Classification by a way in which liabilities are to be settled:
 - Monetary obligations,
 - Deferred revenues.
- Classification by a maturity:
 - Long-term liabilities,
 - Short-term liabilities.

A distinction between operating payables and financial (non-operating) liabilities is similar as in the case of receivable accounts:

- **Operating payables** stem from a given company's recurring core business activities and are expected to demonstrate a repeating turnover (i.e. to grow in tune with growing sales and to decline in tune with falling sales), e.g.:
 - Payables to suppliers of raw materials, resulting from prior purchases with deferred payment terms, offered by a company's suppliers.
 - Payables to employees, resulting from accrued but not yet paid salaries.
 - Tax-related liabilities, resulting from accrued but not yet paid income and other taxes, related to the company's recurring operations.

- Some liabilities resulting from derivative instruments (e.g. currency forward contracts), resulting from the company's actions aimed at hedging its operating cash flows (e.g. hedging against a currency risk exposure, linked to trade receivables that stem from export sales and that are settled in foreign currencies).
- **Financial (non-operating) liabilities** do not stem from the core business activities and as such are not expected to closely follow changes of a scope of a given company's operations, e.g.:
 - Liabilities resulting from bank loans (borrowings).
 - Liabilities resulting from corporate bonds issued by a company.
 - Liabilities resulting from loans borrowed from other entities or private persons.
 - Some liabilities from derivative instruments (e.g. currency futures), resulting from the company's speculative investments (i.e. unrelated to its hedging activities).
 - Some tax-related liabilities, resulting from accrued but not yet paid income and other taxes, unrelated to the company's recurring core business operations (e.g. income taxes payable, resulting from gains on sale of speculative derivative instruments).
 - Liabilities related to penalty fines sentenced by courts or other regulatory bodies (e.g. for an environmental pollution).

Similarly as in the case of receivable accounts, a distinction between operating and non-operating liabilities is relevant for a financial statement analysis, as well as for simulating a given company's future cash flows and liquidity position (Nissim & Penman, 2003). This is so because the operating payables tend to stay positively correlated with corporate sales (or more generally, a company's scale of operations) and as such they are expected to go on "rolling over", as long as the company continues its operating activities. In other words, the operating payables tend to go on growing as long as the company continues increasing its sales, while they tend to fall in tune with contracting sales. In contrast, period-to-period changes in non-operating liabilities are driven by agreed-upon terms and conditions of their underlying borrowings (e.g. loan contacts between a company and its bank) and do not closely follow a changing a scope of business operations.

Example 1.3 Long-term rental as an example of an off-balance sheet liability (under U.S. GAAP and IFRS until 2019).

A company named User rented a selling space (e.g. in a shopping mall) for five years from its owner, named Owner. The User has been offered the following terms and conditions:

- An annual rental fee, amounting to 1.0 EUR million annually, if the rental is non-cancellable and non-transferable.

- An annual rental fee, amounting to 1.2 EUR million annually, if the User decides to retain an option of canceling the rental or sub-renting the property (to other users) before its expiration.

Accordingly, a total five-year rental fee amounts to 5.0 EUR million if the User abandons the cancellation option, while it amounts to 6.0 EUR million if the User prefers to retain the more flexible terms (permitting cancellation or sub-rental to other parties).

The User is quite certain that it will occupy the rented space for at least five following years. Thus, it decides to select the cheaper option. In such a case, the User bears a five-year *non-cancellable* liability to the Owner, with a total nominal value amounting to 5.0 EUR million. However, under some accounting standards (other than IFRS and U.S. GAAP since 2019) this liability is not reported on the face of the User's balance sheet, due to the following arguments:

- From a legal point of view, the rented selling space is not owned by the User (which means that the User cannot freely sell it or even sub-rent it), and therefore, it should not be included within its assets.
- If the User's total assets do not change as a result of the rental contract, then its equity and liabilities should not be affected as well (to keep both sides of its balance sheet in a balance), meaning that the rental-related long-term liabilities, totaling 5.0 EUR million, should not appear on a right-hand side of the User's balance sheet.

In this scenario, the User would transfer 1.0 EUR million annually to the Owner. This expenditure would be expensed in an income statement (as a selling expense). An information about a monetary amount of the remaining future rental payments (4.0 EUR million after one year, 3.0 EUR million after two years, and so on) would be disclosed only in a respective note to the User's financial statements.

Source Author.

Classification of corporate liabilities by their balance-sheet presence distinguishes between **on-balance sheet liabilities** and **off-balance sheet liabilities**. The former capture all obligations that are reported on a face of a balance sheet. In contrast, the latter class includes all obligations (typically of a financial nature) that are not reported in a balance sheet (even though they often must be settled unconditionally in future periods and may have material amounts). The most common types of the off-balance sheet liabilities are operating leases and rental-related obligations. Although in some accounting systems (e.g. under IFRS and U.S. GAAP until 2019) they are not reported in a balance sheet, most accounting standards require extensive disclosures (in notes to financial statements) about basic terms

and monetary amounts of significant off-balance sheet liabilities. A nature of a hypothetical off-balance sheet liability is illustrated in Example 1.3.

The off-balance sheet liabilities (if material), such as those illustrated in Example 1.3, should never be overlooked in a financial statement analysis, since they may be very dangerous for a company's financial liquidity. Their exclusion from a balance sheet may make a company look less indebted than it actually is. In case of an unforeseen deterioration of its economic environment (e.g. a sudden fall of demand for its products), the entity may be left with an unused rented capacity (e.g. empty selling space in its closed stores) while still having to settle regular rental fees. For example, suppose that the User in Example 1.3 was overly optimistic and it had to shut down its store located in the rented property, after two years in business. In such circumstance, the company would no longer generate any revenues from its rented space (neither revenues from sales of its own products nor revenues from sub-renting the property to other entities), while still having to pay 3.0 EUR million in total for the unused capacity. Thus, any material off-balance sheet liabilities should be thoroughly investigated (with the use of an information disclosed in respective notes) in a financial statement analysis.

Another classification of liabilities differentiates **document-backed liabilities** from **provisions for liabilities**. Carrying amounts of the former, although subject to estimates, are typically based on a relatively objective and verifiable information included in underlying documents, such as contracts with suppliers, bank loan agreements, invoices received or legal regulations. For instance, suppose that a hypothetical airline has purchased a new airplane from its manufacturer. Its agreed-upon price amounts to 100 EUR million, of which 50 EUR million is payable on a delivery day, while 30 EUR million is to be settled after one year from the delivery and the remaining 20 EUR million after two years. After receiving the airplane from its manufacturer the purchaser will recognize it in its fixed assets and will transfer 50 EUR million to the vendor. The remaining 50 EUR million will be reported as a liability, at its discounted value (given that this is a long-term obligation). Since nominal monetary amounts of future payments are discounted to their current values, an appropriate discount rate must be estimated first. Thus, a resulting carrying amount of the liability will not be fully immune to some subjective judgments and estimates. However, a majority of other inputs used in its estimation, such as the timing and monetary amounts of future payments, are objective and reflect the agreed-upon terms of the contract.

In contrast, provisions for liabilities capture highly probable obligations, in which case either a timing or a monetary amount (or both) of future payments is highly uncertain and must be estimated, usually with a substantial load of subjective judgments. A nature of a fictional provision for liability is illustrated in Example 1.4.

Other common examples of expected liabilities, where either the timing or the monetary amounts of future payments (or both) are highly uncertain, include:

- Future product warranty costs—for instance, if a car manufacturer sells 10,000 units of a new car, with a three-year warranty for a product quality, it cannot precisely determine its future expenditures on warranty services (instead, those likely future expenditures may only be estimated with a high dose of uncertainty).
- Future product returns—for instance, if a clothing retailer offers a specified time during which its customers may unconditionally return purchased but unused products, it cannot precisely determine its future cash outflows for the returned goods.
- Future mandatory expenditures on dismantling or removing a given company's worn out fixed assets—for instance, a mining company may be required (by law) to restore a site in the future (when its mine is liquidated), with a future restoration expenditure being highly uncertain.
- Future income taxes payable, resulting from prior temporary book-tax differences, expected to reverse in the future (reported as **deferred tax provisions** or **deferred tax liabilities**).

Majority of provisions for liabilities are highly vulnerable to an estimation uncertainty. Consequently, any analyst should be aware that firms may often artificially manipulate their estimates, by taking subjective assumptions, aimed at reporting “targeted” carrying amounts of provisions. Changes in provisions, in turn, affect reported earnings. Thus, if an investigated company reports suspiciously high or low provisions for liabilities (or significant period-to-period changes in provisions), then a reasonableness of their underlying assumptions should be scrutinized (based on disclosures available in respective notes).

Example 1.4 Jubilee employee benefits as an example of a provision for liability.

A company approved a new employee motivation program, whereby any employee, who will work for the company for at least ten consecutive years (since his or her employment be the company), will be granted an extra bonus (payable in cash), with the following terms and conditions:

- The jubilee bonus will be payable to a given employee on a day following his or her tenth anniversary of a work for the company.
- A monetary amount of the bonus will be equal to a given employee's salary, earned in a month preceding his or her tenth anniversary of a work for the company.

Thus, after adopting such a “jubilee employee benefit” program, the company bears some potential employee-related liabilities. They should be reflected in its balance sheet at discounted values, given their long-term nature.

However, a discount rate is not a sole input that must be estimated, since the actual future payments, related to those obligations, will be affected by the following factors (among others):

- Future employee retention rates—only those employees will be entitled to benefit from the jubilee bonus, who will work for the company for at least ten consecutive years (and the company cannot precisely compute its future employee turnover rates, even though it knows well its current and past turnover rates).
- Future employee salaries—monetary amounts of future jubilee bonuses payable will be based on individual employees' future salaries, which in turn will be affected by multiple uncertain factors, such as a future inflation rate in a country.

Consequently, in order to obtain a carrying amount of its provision for the expected liabilities, resulting from the adopted "jubilee employee benefit" program, the company must estimate its uncertain future cash outflows (separately for individual future years) and then discount them, with an application of the estimated discount rates. Such probable obligations will be reported as provisions for liabilities, since the timing as well as the amounts of the future payouts are highly uncertain. In an extreme but imaginable case, it may ultimately turn out that the company will not have to pay any jubilee bonuses (if its employee turnover rates will be unusually high and all employees will leave the company before entitling to their jubilee bonuses). However, it may also turn out that almost all employees will benefit from their bonuses (if the company is a highly reputable employer).

Source Author.

Another criterion classifies liabilities and potential liabilities on the ground of estimated probabilities of future economic outflows from a company. The first category here consists of liabilities and provisions, in which case it is more likely than not that they will have to be settled somehow (even if the timing or the monetary amounts of future payments are uncertain). In contrast, **contingent liabilities** reflect potential obligations that may or may not turn into real payable obligations in the future. They are conditioned on some uncertain future events in which case a probability of an occurrence is deemed relatively low. The most common contingent liabilities are related to:

- Litigations—for instance, a company may be sued by its former employee (e.g. for an allegedly unpaid remuneration), or by its customer (e.g. for a health damage, allegedly caused by the company's products) or by its competitor (e.g. for violating a legally protected patent), with a resulting high uncertainty of an ultimate court sentence (giving a rise to a contingent liability that may turn into a payable obligation, if a company loses its litigation).

- Debt guarantees—for instance, a company may guarantee a repayment of a third party's debt (e.g. owed to its bank), by granting a signed promise to the creditor to repay that debt (in place of the actual debtor) in case when the debtor itself becomes insolvent.

The contingent liabilities are not yet payable and thus they are not presented in a balance sheet. However, they may become payable if the uncertain future events (e.g. final court verdicts) turn unfavorable for a company. Therefore, the contingent liabilities, if material, should never be overlooked in a financial statement analysis, since they may be very dangerous for a firm's sustainability. Furthermore, some techniques of overstating reported earnings and understating reported liabilities, via arranged artificial transactions with heavily indebted unconsolidated companies, are related to debt guarantees granted to those companies. This accounting gimmick is discussed with more details in other, more advanced books (Welc, 2020).

From a financial analysis perspective, it is also important to discriminate between **monetary obligations** and **deferred revenues** (also called **unearned revenues** or **deferred income**). The former capture liabilities that will have to be settled in the future and will require sacrificing some economic resources (either cash or some non-monetary assets). Majority of liabilities and provisions fall into this category. However, in a liability section of their balance sheets companies also include deferred revenues, which do not have a substance of true liabilities. Instead, they correspond to already received economic benefits (revenues or gains) in which case a recognition in an income statement has been deferred until later periods.

A good example of the deferred revenue is offered by an advance payment, received by a software company from its customer, after ordering a business software services, such as designing and implementing a management software customized to the customer's specific requirements. This is illustrated in Example 1.5. The circumstances assumed in this example call for deferring the received but unearned revenue, amounting to 500 EUR thousand (instead of recognizing it immediately as revenue in an income statement). Although the software company is not expected to return that money to its customer (quite the reverse, it may expect to receive another payments, after completing the underlying contract), this inflow of cash should be recognized as a revenue only in future periods when the contracted services are rendered. Otherwise, the recognized revenues would not match the incurred expenses, since the company would first recognize only revenues, amounting to 500 EUR thousand, while later on (i.e. in the following two years) it would book only its contract-related expenses, of 800 EUR thousand. Finally, after completing a contract, again only revenues, amounting to 500 EUR thousand, would be reported. Such a revenue recognition policy would significantly overstate the company's reported earnings at the beginning and end of a contract (when only contract revenues would be recognized).

The other examples of unearned revenues, which should be fully or partially deferred and reported as liabilities, include:

- Advance rental income—for instance, a property owner may receive an advance rental payment from a property user, for a two-year rental (in such a case a deferred revenue should be transferred, from deferred revenues to revenues in an income statement on a straight-line basis, throughout a two-year period).
- Government grant related to fixed assets—for instance, if a company is granted a subsidy for a purchase of a fixed asset, such as a production machinery, the obtained grant should either be deferred in liabilities and then recognized in an income statement (as the related asset is depreciated) or be deducted from the asset's carrying amount.

Example 1.5 Deferred revenues resulting from an advance payment received from a customer.

A software company won a contract under which it is ordered to design and implement a customized business software for another company. The contract specifies the following terms and conditions:

- A total contract price amounts to 1.0 EUR million and covers a transfer of a software license (valued at 700 EUR thousand) and a fee for the after-sale consulting and training services, provided to the customer (valued at 300 EUR thousand).
- A deadline for designing and implementing a software has been set as twelve months from signing the contract.
- The after-sale consulting and training services will be provided in twelve-month time after implementing a software.
- Immediately after signing the contract the customer transfers to the software company an advance payment, amounting to 500 EUR thousand.
- A remaining part of the entire remuneration will be settled after completing the contract.

Accordingly, the agreed-upon time for performing the whole contract is 24 months. The software company estimated (before signing the contract) that its contract-related costs will amount to 800 EUR thousand, resulting in an expected gross profit of 200 EUR thousand.

According to the contract terms, the software company collects 500 EUR thousand immediately after entering the contract. Consequently, its assets will grow by that amount. However, the obtained advance payment should not be recognized as a revenue when received, since related services have not yet been rendered. Instead, it should be deferred (as deferred revenues in the liabilities section of a balance sheet) until later periods, in order to match contract revenues with its expenses. After completing the first stage of the contract (i.e. after designing and implementing the software), a respective part of these deferred revenues will be transferred to revenues, while

the remaining unearned revenues will stay deferred, until the time when the related consulting and training services are rendered.

Source Author.

It is worth noting that deferred revenues may constitute either an obligation to deliver some products or services, usually with expected profits (as in the case of advance payments), or a pure economic benefit, not requiring any future economic sacrifices (as in the case of many asset-related grants). Thus, their economic substance is significantly different from most other types of liabilities. However, the abuses in accounting for deferred revenues (by deliberately understating their values and prematurely reporting revenues) constitute one of the common techniques of earnings manipulations (Welc, 2020).

Finally, liabilities may be classified according to their maturities, as either long-term (noncurrent) or short-term (current) liabilities. **Short-term liabilities** are generally payable within a course of twelve months, following a reporting date, while **long-term liabilities** are payable after twelve months from that date. A distinction between the two is very important, since the sooner a given liability becomes payable, the stronger pressure on a corporate financial liquidity it may exert. This is so because it is usually easier to ensure an access to a sufficient amount of funds, needed for settling corporate obligations, when payment terms are relatively remote.

From an analytical point of view, it is important to be aware that various classes of liabilities may have very diverse and often non-comparable measurement bases, as well as differing impact on corporate reported earnings. For example:

- Operating liabilities, such as payables to suppliers or employees, are typically carried at their historical costs.
- Liabilities resulting from speculative investments, such as derivative contracts, are reported at their current fair values, with resulting revaluation gains or losses included in a period's profit or loss.
- Provisions for liabilities are recorded at their current estimated fair values.
- Financial debts, such as bank borrowings, may be accounted for by a so-called amortized cost.

Furthermore, various types of liabilities may differ significantly in terms of an extent to which their carrying amounts are sensitive to subjective judgments and assumptions. While book values of majority of operating payables are quite objective and based on underlying documents (such as invoices or contracts), accounting for provisions or deferred revenues may entail many more subjective assumptions (often not easily verifiable). Moreover, some material actual or potential liabilities may not be reported in a balance sheet (e.g. contingent liabilities), which may significantly complicate a financial statement analysis. Finally, numerous techniques of manipulating reported earnings are related to corporate liabilities. Thus, in a

financial statement analysis, the most crucial aspects related to accounting for liabilities include:

- A given company's assumptions taken when estimating carrying amounts of its liabilities and provisions for liabilities—the more optimistic assumptions (e.g. discount rates or future salaries) are taken, the more understated the reported liabilities may be (and the more overstated the current reported earnings may be).
- A given company's approach toward deferring unearned revenues—the more aggressively (e.g. prematurely) a firm recognizes its unearned revenues in its income statement (instead of deferring their justified portions to later periods), the more overstated its current reported earnings may be.
- A given company's approach toward using off-balance sheet liabilities—the higher is a relative share of the firm's off-balance sheet obligations in total liabilities, the more distorted a picture of its indebtedness (as presented in its balance sheet) may be.
- A relative share of contingent obligations in total liabilities (particularly if the former result from debt guarantees granted to other entities)—the higher the relative share of a firm's contingent liabilities in its total liabilities, the more distorted the picture of its indebtedness (as presented in its balance sheet) may be.

Table 1.7 contains an extract from consolidated balance sheet of Volkswagen Group, depicting its noncurrent and current liabilities, as at the end of fiscal years 2007 and 2008. As may be seen, the VW's total liabilities (reported on its balance sheet, i.e. excluding any off-balance sheet and contingent obligations) amounted to 130,531 EUR million [= 65,729 + 64,802] at the end of fiscal year 2008, after rising from 113,419 EUR million [= 57,351 + 56,068], as at the end of a previous year (a growth by 15.1% y/y). The company's total on-balance sheet liabilities were almost evenly distributed between their noncurrent and current portions.

The company's combined long-term and short-term financial liabilities constituted by far the most significant source of its external capital, with their share in total liabilities of 53.1% (as at the end of fiscal year 2008). The total financial liabilities grew in 2008 by 19.6% (or 11,388 EUR million in monetary terms). In light of such a high and rising share (as well as a significant monetary amount) of the VW's financial liabilities, it is clearly reasonable to investigate Note 25, in search of a more detailed information.

Total noncurrent and current provisions (including provisions for pensions, provisions for taxes and other provisions) amounted to 35,216 EUR million (as at the end of fiscal year 2008) and made up almost 27% of the company's total liabilities. Clearly, at this share (and a monetary amount), any changes in assumptions, taken by the company in estimating carrying amounts of its provisions, could have significant impact on its reported earnings and total liabilities. Thus, it seems legitimate to review respective notes to its financial statements, in a quest for some more

Table 1.7 Consolidated liabilities of Volkswagen Group as at the end of fiscal years 2007 and 2008

In EUR million	Note	2007	2008
Noncurrent liabilities			
Noncurrent financial liabilities	25	29,315	33,257
Other noncurrent liabilities	26	2,245	3,235
Deferred tax liabilities	27	2,637	3,654
Provisions for pensions	28	12,603	12,955
Provisions for taxes	27	2,275	3,555
Other noncurrent provisions	29	8,276	9,073
		57,351	65,729
Current liabilities			
Current financial liabilities	25	28,677	36,123
Trade payables	30	9,099	9,676
Current tax payables	27	98	59
Other current liabilities	26	7,084	8,545
Provisions for taxes	27	1,828	1,160
Other current provisions	29	9,282	8,473
Liabilities associated with assets held for sale	23	–	766
		56,068	64,802

Source Annual report of Volkswagen Group for fiscal year 2008

detailed disclosures that could enable an evaluation of a nature of these provisions, as well as reasonableness of their underlying assumptions.

The other line items of Volkswagen Group's liabilities inform us that:

- Other noncurrent liabilities, deferred tax liabilities, current tax payables and liabilities associated with assets held for sale did not have significant shares in the company's total liabilities (thus, their relevance for the VW's financial position was probably limited).
- Trade payables, that constitute one of the most recurring types of corporate liabilities, made up less than 10% of the VW's total liabilities.
- The company did not report any line item directly referring to its deferred revenues (however, they could have been included within some other line item, such as other current provisions).

1.4.6 Classes of Shareholders' Equity

Generally speaking, corporate assets may be financed from two broad categories of funds:

- Liabilities and provisions (provided by non-shareholders and expected to be repaid in future periods) discussed in the preceding section.
- A given company's own funds, called shareholders' equity (often abbreviated to an equity), poured to a firm by its shareholders (owners).

Shareholders' equity constitutes a very important source of an enterprise's capital (Stutely, 2007). Its relevance for a firm's functioning and survival will be illustrated later in this book. The equity is also called **net assets**, since it reflects a book value of a given company owner's residual claims against its assets, after all creditor's claims are satisfied. In other words, it informs about a book value of any business assets, that would remain for a distribution among its owners, after liquidating a company and settling all its liabilities.

From an economic perspective, the shareholders' equity may be classified according to the following criteria:

- Source of its origin, which differentiates between:
 - Paid-in capital (poured into a business at its inception and in later periods).
 - Undistributed (retained) income, earned by a firm in the past and not paid out as dividends.
 - Revaluation surpluses (from changes of values of corporate assets and liabilities, recognized directly in equity).
- Parties to which it is attributable, that is:
 - Shareholders of a parent company.
 - Non-controlling shareholders of in the parent's subsidiaries.

Any company's shareholders may pour their funds into it via two channels:

- Either directly from their own "pockets"—when an enterprise is formed and issues its initial shares, or in later periods, when it issues new shares (this form of the shareholders' equity is often called **paid-in capital**, or **subscribed capital**), or
- Indirectly, from profits earned by a business so far, but not distributed to its owners as dividends (this form of the shareholders' equity is called **retained earnings**).

Accordingly, the retained earnings include any company's undistributed past after-tax profits. For instance, suppose that in a given period a business generates 1,000 EUR of an after-tax profit. Its shareholders, that meet at Annual Shareholder's Meeting, have to make a decision on what to do with that profit: They may either distribute it among themselves (in a form of a dividend) or to leave it within the company (e.g. for reinvestment in its future operations or for repaying its debts). There exist at least three options that may be considered here:

- Either leaving the entire profit, amounting to 1,000 EUR, within the firm as its retained earnings, or

- Paying out the entire profit, amounting to 1,000 EUR, to the company's shareholders as a dividend (which would reduce the firm's cash balances, as well as its equity, by 1,000 EUR), or
- Leaving part of the profit (for example, 400 EUR) in retained earnings, while paying out the remaining amount (here 600 EUR) to the shareholders' "pockets".

In a latter scenario, the company's cash balances and equity would fall (after a dividend payment), by 600 EUR each, while an undistributed profit, amounting to 400 EUR, would stay included within the entity's shareholders' equity, as part of its retained earnings.

A third type of the shareholders' equity, according to its origin, is a **revaluation surplus**. This is a category of equity that corresponds to changes in carrying amounts of those corporate assets and liabilities, which, according to accounting regulations, are recognized directly in equity (instead of being recorded in an income statement). A good example is an upward revaluation of an item of PP&E under IFRS, when a given company applies a revaluation model of accounting for its PP&E (instead of a historical-cost model). Under the revaluation model, when a fair value of a given noncurrent asset diverges materially from its carrying amount, then the latter is revalued in a balance sheet to the former. Under IFRS, such an upward revaluation, (if it does not constitute a reversal of a prior downward revaluation), is to be recognized directly in equity and reported as other comprehensive income (however, a downward revaluation, if it does not constitute a reversal of a prior upward revaluation, should be passed through an income statement as other operating expense). The upward revaluation of PP&E is illustrated in Example 1.6.

The other examples of changes of carrying amounts of assets and liabilities, which under IFRS (and some other accounting standards) are recognized directly in equity and reported as other comprehensive income (instead of passing through an income statement), were provided in section "[Components of Corporate Total Income Excluded from Income Statement](#)" of this chapter. A detailed discussion of these elements of a company's total comprehensive income lies beyond the scope of this book (it is covered by textbooks addressing the application of IFRS). However, for a financial statement analysis, it is important to keep in mind that recognizing these items directly in equity may significantly distort the analysis of a company's profitability. This is so because significant upward or downward changes in a company's net wealth (e.g. from an appreciation or a fall of fair values of its assets), may be "hidden" outside a firm's income statement.

Example 1.6 Upward revaluation of property, plant and equipment (PP&E) under IFRS.

A company applies a revaluation model of accounting for its PP&E. At the end of a year, it ordered an independent appraisal of current fair values of individual items of its PP&E (which have never been revalued before). It has

turned out that the appraised fair values of its PP&E total 14,000 EUR, while their current book values sum up to 10,000 EUR. The company's statutory income tax rate is 25%, while its balance sheet before a revaluation looks as follows:

Assets		Equity and liabilities (E&L)	
PP&E	10,000	Equity	5,000
Current assets	15,000	Liabilities	20,000
Total assets	25,000	Total E&L	25,000

Under the revaluation model of accounting for PP&E the results of such an appraisal require revaluing the total carrying amount of the company's PP&E upward, by 4,000 EUR (from their current book value, amounting to 10,000 EUR). Consequently, its total assets increase by 4,000 EUR (to 29,000 EUR). Such an increase in asset's fair values, if not reflecting appraisal manipulations (overstatements), constitutes an economic gain. However, according to IFRS, this is not reported as a gain in an income statement. Instead, it is recorded directly in equity and liabilities as follows:

- A deferred-tax provision (part of liabilities) is boosted by an amount of a revaluation gain, multiplied by a company's effective income tax rate (here, $4,000 \text{ EUR} \times 25\% = 1,000 \text{ EUR}$).
- A residual amount of the revaluation gain (here, 3,000 EUR) is recorded directly in equity, as a revaluation surplus.

As a result, a carrying amount of our company's equity would increase from 5,000 EUR to 8,000 EUR, without any revaluation gain appearing in its income statement. Its total liabilities and provisions, in turn, would grow to 21,000 EUR. Consequently, the company's post-revaluation balance sheet would look as follows:

Assets		Equity and liabilities (E&L)	
PP&E	14,000	Equity	8,000
Current assets	15,000	Liabilities	21,000
Total assets	29,000	Total E&L	29,000

The company's equity would from now contain a separate line item, reflecting a revaluation surplus, amounting to 3,000 EUR.

Source Author.

A second criterion for categorizing shareholders' equity discriminates between **equity attributable to shareholders of a parent company** and **equity attributable to non-controlling interests** (or **minority interests**). Similarly as in a case of net

earnings reported in an income statement, a necessity for separating these two classes of equity results from procedures of a financial statement consolidation, applied when a parent company is not a sole shareholder of its subsidiary, but controls it by owning, for instance, 60% interest the subsidiary's equity. A hypothetical example of such a relationship was presented on Chart 1.2 earlier in the chapter, where a parent company A held 60% shares in equity of its directly controlled subsidiary B, that in turn controlled a company C, by holding 75% shares in its equity (accordingly, it was concluded that company A indirectly controlled company C).

In such a case, according to the principles of a financial statement consolidation, company A fully consolidates financial results of both companies B and C. It means that in the A's consolidated income statement all individual line items of income statements of its both subsidiaries are added in full amounts to the respective numbers that appear on the parent's separate income statement. The same full consolidation rules apply to a consolidated balance sheet, where all individual assets and liabilities of both subsidiaries are added in full amounts to the respective numbers that appear on their parent's stand-alone balance sheet. However, a control of company A over companies B and C does not grant it an entitlement to be a sole beneficiary from economic benefits, attributable to net assets held by its controlled subsidiaries (e.g. when they are liquidated).

For example, if stand-alone net assets (i.e. a difference between total assets and total liabilities), of companies A, B and C, amount to 10,000 EUR, 4,000 EUR and 1,000 EUR, respectively, then the A's reported consolidated equity amounts to 15,000 EUR (provided that there were no any intra-group transactions between A, B and C, that would have to be adjusted for on consolidation). However, out of 4,000 EUR of company B's net assets, only 2,400 EUR is attributable to the company A, according to A's 60% interest in B's equity. A remaining 1,600 EUR is attributable to B's non-controlling shareholders. Likewise, only 45% of company C's net assets is attributable to company A, since A's indirect interest in the C's equity equals 45% [= 60% × 75%]. Consequently, the company C's net assets, attributable to the company A's shareholders, amount to 450 EUR [= 45% × 1,000 EUR]. As a result, the equity section of A's consolidated balance sheet would look as depicted in Table 1.8.

Table 1.8 Consolidated shareholders' equity of company A, that reflects equity interests depicted on Chart 1.2 (earlier in the chapter)

Amounts in EUR	
Total consolidated shareholders' equity	15,000
<i>Attributable to:</i>	
Shareholders of the parent company ^a	12,850
Non-controlling interests	2,150

^a A's separate net assets (10,000 EUR) + B's net assets attributable to A (2,400 EUR) + C's net earnings attributable to A (450 EUR)

Source Author

Table 1.9 Consolidated equity of Volkswagen Group, as at the end of fiscal years 2007 and 2008

In EUR million	Note	2007	2008
Equity	24		
Subscribed capital		1,015	1,024
Capital reserves		5,142	5,351
Retained earnings		25,718	28,636
Equity attributable to shareholders of Volkswagen AG		31,875	35,011
Minority interests		63	2,377
		31,938	37,388

Source Annual report of Volkswagen Group for fiscal year 2008

It should be kept in mind that high share of non-controlling interests in total consolidated equity may erode credibility and comparability of corporate consolidated balance sheets (Welc, 2020). This is so because in such circumstances an analyst lacks any information about a real proportional participation of a parent company in individual classes of assets and liabilities, reported in its consolidated balance sheet. It stems from the fact that total consolidated equity constitutes an only single line item of the consolidated balance sheet, for which an amount attributable to non-controlling interests is disclosed.

Table 1.9 contains an extract from consolidated balance sheet of Volkswagen Group, depicting the company's equity, as at the end of fiscal years 2007 and 2008. As may be seen, the VW's equity, attributable to its shareholders, grew in 2008 from 31,875 EUR million to 35,011 EUR million (an increase by 9.8% y/y). The company identified three line items of its equity attributable to its shareholders. Subscribed capital and capital reserves probably made up its entire paid-in capital (but to confirm it a more detailed information, from Note 24, is required). Noticeably, retained earnings constituted a major component of the company's total equity, with their share of 81.8% (in the equity attributable to shareholders of Volkswagen AG). Such a high share of the retained earnings is not uncommon for mature businesses that own portfolios of globally recognized brands and may boast long histories of their profitable core business operations.

In both years, a share of minority (non-controlling) interests in the VW's total consolidated shareholders' equity was rather low. However, both the share and their monetary amount rose noticeably in fiscal year 2008. A cause of such an increase in minority interests cannot be learned from a face of the balance sheet itself. However, it could have been brought about by any of the following factors:

- Either a significant increase in a carrying amount of net assets of those of all VW's subsidiaries, where the company holds less than 100% equity interest, or
- A significant increase of the minority investors' share in the equity of the VW's non-wholly owned subsidiaries (with a corresponding decrease of the VW's share), or

- A significant business combinations (takeovers) closed in fiscal year 2008, whereby Volkswagen Group obtained its control over other entities, by acquiring less-than-full interests in their equities.

Generally speaking, a breakdown of the VW's equity, as at the end of fiscal year 2008, does not suggest any concern. The retained earnings constitute a main component, while the share of minority interests stays rather low. Nevertheless, if an observed noticeable increase in the relative weight of the minority interests is continued in the future, it could significantly erode a reliability of the company's financial statement analysis.

1.5 Content of a Cash Flow Statement

1.5.1 What Is a Cash Flow Statement?

A third primary financial statement is a **cash flow statement**. Its main goal is to provide an information about a total change in a given company's cash and cash equivalents in a given period, as well as about individual major categories of corporate cash flows. A primary reason for not limiting a corporate financial reporting to an income statement and a balance sheet is their **accrual approach**.

The accrual basis of accounting means that transactions and other economic events are recorded in an income statement when they happen, regardless of a timing of related actual cash inflows and outflows. For instance:

- Sales revenues are recognized when product or service is delivered, while a related payment may be collected later on (in a case when a customer is offered a deferred payment term) or, alternatively, in earlier periods (when a customer transfers any advance payments).
- Inventory turns into cost of sales when a product is sold, while related payments for purchasing or manufacturing it may be incurred in earlier periods.
- An entire expenditure on a new item of property, plant and equipment may be incurred when it is purchased, while in an income statement it will be expensed via depreciation charges (that spread across multiple future periods).
- Obsolete inventories are written down (and expensed as part of other operating expenses) when their impairment is stated, while the related actual cash-based losses occur when those impaired goods are sold.

Divergences between timing of revenue and expense recognition in an income statement on the one side, and timing of related cash inflows and outflows on the other side, create a possibility of significant deviations of reported corporate earnings from generated cash flows (Reider & Heyler, 2003). It may happen that a business, that reports a net loss, actually increases its cash balances. In contrast, a firm that boasts allegedly high and fast growing accounting earnings may "burn"

its cash resources. Consequently, in a financial statement analysis, it is always recommendable to supplement an accrual-based information, disclosed in an income statement and a balance sheet, by a **cash-based** information, offered by a cash flow statement.

1.5.2 Three Classes of Corporate Cash Flows and Formats of a Cash Flow Statement

From a point of view of cash flows, an entire business activity of any enterprise may be broken down into three distinct areas (Hackel & Livnat, 1996):

- **Operating activities**—primary (core) business operations, such as manufacturing and selling vehicles in Volkswagen Group's case, retail sales of consumer goods by Tesco or rendering telecommunication services by T-Mobile.
- **Investing activities**—purchasing and selling noncurrent assets (PP&E, intangibles, real-estate investments, long-term investments in bonds or shares) or short-term financial assets, including all related costs and benefits (i.e. interest income received, dividends received or gains and losses on sales of these assets).
- **Financing activities**—activities related to corporate sources of funds (other than operating payables), including issues of equity capital, buy-backs of entity's own shares, payments of dividends, proceeds from borrowings, repayments of loans and interest payments.

The operating, investing and financing cash flows sum up to corporate total cash flows in a given period.

Most accounting standards allow for applying one of the two alternative formats of a cash flow statement. Namely, it may be prepared and presented under either direct or indirect method. However, reporting differences between these two alternative approaches affect only cash flows from operating activity (while investing and financing cash flows are identical under both methods). Under the direct method the gross amounts of individual items of operating cash flows (e.g. inflows of cash from sales revenues or payments to suppliers for purchases of inventories) are presented directly. In contrast, under the indirect method the operating section begins with a given company's profit, as reported in its income statement (i.e. resulting from its accrual-based accounting), which is then reconciled to the company's operating cash flows, by a series of adjustments. Since huge majority of corporations present their cash flows under the indirect format, in this textbook only this reporting approach will be discussed. Any readers interested in the direct method of presenting corporate cash flows may find relevant readings in accounting textbooks.

1.5.3 Operating Cash Flows

Under International Financial Reporting Standards, an operating section of a cash flow statement begins with pre-tax earnings, that are then adjusted to arrive at the **operating cash flows** (also labeled as **cash flows from operating activities**). Under some other accounting standards, the operating section begins with net earnings (instead of pre-tax earnings). However, these minor differences do not significantly affect a general comparability and usefulness of corporate cash flow statements.

Generally speaking, there exist three broad groups of factors that may be responsible for discrepancies between accounting earnings, as reported in an income statement (i.e. resulting from accrual-based accounting) and operating cash flows. They include:

- Non-cash revenues, expenses, gains and losses, taken into account in a computation of corporate earnings (e.g. depreciation and amortization, various provisions, gains or losses from revaluations of carrying amounts of assets, profits or losses from equity-accounted investments in associated entities).
- Cash revenues, expenses, gains and losses, that affect pre-tax earnings but relate to investing or financing activities (e.g. interest paid, interest received, dividends received, realized foreign currency gains and losses).
- Changes in non-cash operating current assets (inventories, operating receivables, prepaid expenses) and operating payables (including deferred revenues).

Usually the most significant (in monetary terms) adjustments of pre-tax earnings to operating cash flows include:

- **Depreciation and amortization**—components of operating expenses that lower reported earnings without any simultaneous cash outflows. An actual cash outflow, related to a fixed asset investment, occurs when it is purchased (not when it is depreciated or amortized). Consequently, depreciation and amortization charges must be added back to accounting earnings, to arrive at operating cash flows.
- **Unrealized gains and losses from foreign currencies**—if a given company holds foreign currencies or if it has receivables or liabilities denominated in foreign currencies, then it revalues their carrying amounts periodically, to account for any changes in exchange rates. Such revaluations result in unrealized gains (e.g. when a carrying amount of a given liability, denominated in a foreign currency, falls as a result of favorable exchange rate movements) or unrealized losses (e.g. when a carrying amount of a foreign currency-denominated receivable account decreases, as a result of an exchange rate depreciation), which are reported in an income statement. However, such non-cash gains and losses must be subtracted and added back, respectively, to accounting earnings, to arrive at cash flows.
- **Realized gains and losses from foreign currencies that are unrelated to an operating activity**—a company may report foreign currency gains or losses,

that have already been cashed (e.g. when a receivable account was collected or a liability settled), but which are not related to its operating activities (instead, they may be attributable to investing or financing activity). For example, a company may issue corporate bonds denominated in foreign currencies. Realized gains or losses, related to interest and principal payments, do affect the company's cash flows. However, such realized gains and losses relate to its financing activities, so they must be subtracted and added back, respectively, to its accounting earnings, to arrive at operating cash flows.

- **Interest earned and interest paid**—similarly as in the case of foreign currency gains and losses, a company may report unrealized or realized interest income or interest expenses. Unrealized interest income and interest expense must be subtracted and added back, respectively, to reported earnings, to arrive at cash flows. Realized interest earned or interest paid, in turn, may be related to investing and financing activities, respectively, so it must be excluded from operating cash flows (and reclassified to either investing or financing cash flows).
- **Share in profits and losses of associated companies (and other equity-accounted investments)**—if a given company applies an equity method of accounting for its investments in associates (and joint ventures), it recognizes non-cash profits and losses, attributable to its equity interests in these entities. However, they may include non-cash items. They are also related to the company's investing activities. Accordingly, they should be excluded from operating cash flows.
- **Gains and losses on disposals of noncurrent assets**—if a given company disposes of its fixed asset (e.g. an office building or production machinery), it recognizes a gain or loss that reflects a difference between its proceeds from a disposal and an asset's carrying amount. Such gains and losses are unrelated to an operating activity, so they should be excluded from operating cash flows (and only actual cash proceeds from an asset's sale should be reported within investing cash flows).
- **Changes in provisions for liabilities**—provisions for expected liabilities constitute a component of corporate expenses, that lower reported earnings without any current cash outflows. Their reversals, in turn, boost reported earnings without any current cash inflows. Consequently, accounting earnings should be adjusted for any changes in such non-cash provisions, to arrive at cash flows.
- **Changes in write-downs of assets**—similarly to provisions, impairment write-downs of assets (e.g. for obsolete inventory, doubtful receivables or impaired fixed assets) constitute a component of corporate expenses, that lower reported earnings without any current cash outflows. In contrast, their reversals increase reported earnings, without any simultaneous cash inflows. Accordingly, accounting earnings should be adjusted for changes in non-cash write-downs of assets, to arrive at cash flows.
- **Changes in inventories, operating receivables and prepaid expenses**—increases in balances of non-cash operating current assets tie up corporate cash (without an immediate impact on reported earnings), while their decreases

release cash. Consequently, changes in these non-cash operating assets must be accounted for, when adjusting accrual-based earnings to operating cash flows.

- **Changes in operating payables and deferred revenues**—in contrast to non-cash operating current assets, increases in operating payables and deferred revenues boost corporate cash balances, while their decreases drain a given firm's cash. Therefore, any changes in amounts of operating payables and deferred revenues must be accounted for, when adjusting accrual-based earnings to operating cash flows.

Table 1.10 contains an extract from consolidated cash flow statement of Volkswagen Group, depicting its operating cash flows generated in fiscal years 2007 and 2008. As may be seen, the VW's total operating cash flows (abbreviated to OCF further in the text) amounted to 10,799 EUR million in 2008, after falling by 31% from a preceding year. In both periods under investigation the company's OCF exceeded its reported consolidated profit before tax by a substantial margin.

The main factors, responsible for a stated excess of OCF over reported profit, included depreciation and amortization charges (totaling 8,406 EUR million in fiscal year 2008), reported under three separate line items:

- Depreciation and amortization expense.
- Amortization of capitalized development costs.
- Depreciation of leasing and rental assets and investment property.

In turn, the main items that eroded the company's OCF included:

Table 1.10 Consolidated operating cash flows (abbreviated to OCF) of Volkswagen Group in fiscal years 2007 and 2008

In EUR million	2007	2008
Profit before tax	6,543	6,608
Income taxes paid	-1,172	-2,075
Depreciation and amortization expense	5,435	5,191
Amortization of capitalized development costs	1,843	1,392
Impairment losses on equity investments	180	32
Depreciation of leasing and rental assets and investment property	1,780	1,823
Gain on disposal of noncurrent assets	32	347
Share of profit or loss of equity-accounted investment	-71	-219
Other non-cash income/expense	-11	765
Change in inventories	-1,856	-3,056
Change in receivables (excluding financial services)	-942	-1,333
Change in liabilities (excluding financial liabilities)	2,244	815
Change in provisions	1,657	509
Cash flows from operating activities	15,662	10,799

Source Annual report of Volkswagen Group for fiscal year 2008

- Income taxes paid.
- Change in inventories.
- Change in receivables.

A contribution of other individual line items to the Volkswagen Group's total OCF may have been considered weak to moderate.

It is worth noting that the company presents its amortization of capitalized development costs separately from its amortization of other intangible assets. Capitalized development costs correspond to very specific and "soft" intangible assets, while their amortization has a significant weight in the VW's total OCF. Thus, disclosing their amortization in a separate line item seems legitimate. This issue will be discussed with more details in the following chapters.

It is also worth noting that at that time the company excluded financial services receivables from changes in its receivables reported within its operating cash flows. This means that it treated its financial services receivables as a non-operating item (i.e. not resulting from its core business operations), despite their significant share in the company's total assets. This issue (of whether treating financial services receivables as non-operating was legitimate) will be discussed with more details in the following chapters of this book.

1.5.4 Investing Cash Flows

From an economic perspective, **investing cash flows** (also labeled as **cash flows from investing activities**) include three types of business activities:

- Long-term investments in non-financial assets, related to a given company's core business operations, such as property, plant and equipment or intangible assets.
- Long-term equity investments, related to a given company's core business operations, such as controlling interests in other entities (mergers and acquisitions) or non-controlling interests (investments in associated entities).
- Long-term and short-term equity, debt or non-financial investments, unrelated to core business operations, such as expenditures on Treasury bonds, corporate bonds, loans granted to other entities, short-term equity investments or investment properties.

A distinction between the above three categories of activities is important in a diligent scrutiny of a level and breakdown of corporate cash flows. The first two categories of investing cash flows are related to a core business activity and are incurred in order to maintain or extend a given company's future operations, by either its direct investments in tangible and intangible fixed assets (aimed at

enabling future organic growth) or through business combinations or other equity investments into strategically related businesses (e.g. takeovers of competitors or suppliers). Accordingly, these investments are typically aimed at boosting future corporate operating cash flows. In contrast, a third category of investing cash flows is much more discretionary and reflects a given firm's policy toward investing its excess cash balances (into assets unrelated to its core business operations).

Investing cash outflows usually include:

- Expenditures incurred on purchases, construction and assembly of new items of PP&E, intangible assets and investment properties.
- Expenditures incurred on improvements (or repairs) of already existing items of PP&E, intangible assets or investment properties.
- Loans granted to other entities or private persons, if they are unrelated to a given company's operating activities.
- Expenditures incurred on purchases of equity shares in other entities.
- Investments into other securities (e.g. bonds or derivatives).

Investing cash inflows typically include:

- Proceeds from disposals of items of PP&E, intangible assets and investment properties.
- Collected repayments of loans, granted before to other entities or private persons.
- Proceeds from disposals of shares in equity of other entities.
- Proceeds from disposals (or redemptions) of other financial instruments.
- Dividends received from other entities.
- Interest received (e.g. from bank deposits or government bonds).
- Other investment income (e.g. received rental fees, related to investment properties).

However, it must be noted that under IFRS entities have some flexibility in terms of including dividends received and interest received either within operating cash flows or within investing ones. Thus, it is important to be aware that various firms may include the same types of cash inflows (related to dividends and interest income receives) in different sections, with a resulting distorting impact on an intercompany comparability of reported cash flow statements.

Table 1.11 contains an extract from consolidated cash flow statement of Volkswagen Group, depicting its investing cash flows reported for fiscal years 2007 and 2008. As may be seen, the company's total investing cash flows (abbreviated to ICF further in the text) had negative total amounts in both investigated periods. This is quite a typical pattern for most healthy and still growing businesses, that recurringly spend more (on their operating assets) than what they receive from their disinvestments.

A breakdown of Volkswagen Group's investing cash flows informs us that:

Table 1.11 Consolidated investing cash flows (ICF) of Volkswagen Group in fiscal years 2007 and 2008

In EUR million	2007	2008
Acquisition of property, plant and equipment, and intangible assets	−4,638	−6,883
Additions to capitalized development costs	−1,446	−2,216
Acquisition of equity investments	−1,238	−2,597
Disposal of equity investments	14	1
Change in leasing and rental assets and investment property	−2,763	−3,055
Change in financial services receivables	−3,588	−5,053
Proceeds from disposal of noncurrent assets (excluding leasing and rental assets and investment property)	185	93
Change in investments in securities	−1,742	2,041
Change in loans	−596	−1,611
Investing activities	−15,812	−19,280

Source Annual report of Volkswagen Group for fiscal year 2008

- A majority of individual line items had negative amounts, with change in investments in securities being the only significant item that had a positive contribution (and only in fiscal year 2008).
- The company did not obtain any material cash inflows from disinvestments of its noncurrent assets and equity investments.
- The most significant (in monetary terms) expenditures were incurred on PP&E and intangible assets.
- The company incurred material expenditures on other tangible and intangible fixed assets, such as capitalized development costs, leasing and rental assets and investment properties.
- The second largest (in monetary amounts) item of the company's investing outflows were financial services receivables (which may seem somewhat surprising).
- The company was also engaged in some lending activity (loans) other than corresponding to its financial services business.

Again, it seems worth noting that Volkswagen Group presented its expenditures on capitalized development costs separately from other intangible assets. Additions to capitalized development costs constituted more than 10% of the company's total ICF, aggregated for fiscal years 2007 and 2008. Accordingly, reporting them in a separate line item was legitimate.

It is also worth noting that the company's investments in financial services receivables had a significant contribution (almost 25%) into its total ICF, aggregated for fiscal years 2007 and 2008. However, as was noted before, the company excluded those financial services receivables from its operating receivables and thus treated them *implicite* as unrelated to its core business operations.

1.5.5 Financing Cash Flows

Financing cash flows (also labeled as **cash flows from financing activities**) are associated with corporate sources of capital, other than operating payables. Generally speaking, cash inflows and outflows, that relate to two broad classes of capital, fall into this section of a cash flow statement:

- Cash flows that correspond to changes in shareholders' equity.
- Cash flows that correspond to changes in financial (non-operating) liabilities, also called borrowings or debts.

Accordingly, financing cash inflows typically include:

- Proceeds from an issuance of new equity shares.
- Proceeds from bank loans and other borrowings (financial debts).
- Proceeds from an issuance of corporate bonds.

Financing cash outflows, in turn, usually include:

- Payments to shareholders, related to buy-backs of a given company's own shares.
- Dividend payouts.
- Repayments of bank loans and other borrowings.
- Payments related to redemptions of corporate bonds (issued in prior periods).
- Repayments of lease-related liabilities.
- Interest expense paid as well as other expenditures (e.g. bank commissions), related to corporate financial debts.

Under IFRS, entities have some flexibility in terms of whether they include their interest paid within operating cash flows or, alternatively, within their financing cash flows. Accordingly, similarly as in a case of interest income and dividends received (that may be included within either operating or investing cash flows), it is important to be aware that various firms may include the same type of cash outflows (e.g. interest payments) in different sections of their cash flow statements, with a resulting distorting impact on an intercompany comparability of those statements.

Table 1.12 contains an extract from consolidated cash flow statement of Volkswagen Group, depicting the company's financing cash flows generated in fiscal years 2007 and 2008. As may be seen, the VW's total financing cash flows (abbreviated to FCF further in the text) had positive amounts in both investigated periods, with a huge increase observed in 2008. By far the most significant contribution to the company's financing cash flows came from its financial liabilities, particularly its corporate bonds (with considerable proceeds received from bond issuances, as well as large expenditures incurred on bond repayments) and other financial liabilities. In contrast, cash flows related to the VW's shareholders (i.e. capital

Table 1.12 Consolidated financing cash flows (FCF) of Volkswagen Group in fiscal years 2007 and 2008

In EUR million	2007	2008
Capital contributions	211	218
Dividends paid	-497	-722
Capital transactions with minority interests	-	-362
Other changes	-12	-3
Proceeds from issue of bonds	9,516	7,671
Repayment of bonds	-8,484	-8,470
Change in other financial liabilities	93	9,806
Finance lease payments	-40	-15
Cash flows from financing activities	787	8,123

Source Annual report of Volkswagen Group for fiscal year 2008

contributions and dividends paid) had a much more moderate impact on the company's total financing cash flows. In fiscal year 2008 the company also reported some payments related to its capital transactions with minority interests (i.e. with non-controlling shareholders of the VW's subsidiaries), probably related to the company's acquisitions of shares in equity of its subsidiaries (from their minority shareholders).

1.5.6 Net Cash Flows

In theory, a period-to-period change in an amount of cash and cash equivalents, as reported in a given company's balance sheet, should be equal to a sum of its operating, investing and financing cash flows. In practice, however, these numbers may diverge from each other (although they should be reconciled in the cash flow statement or in respective notes to financial statements). There may exist several reasons for such discrepancies, of which the most commonly met ones relate to the effects of currency translation as well as to an inclusion of some cash and cash equivalents in assets held for sale.

For example, suppose that a hypothetical company reports its financial results in EUR, but it holds all of its cash balances on bank deposits denominated in USD. Suppose also that a total amount of its cash, held on its bank accounts at the ends of two consecutive reporting periods, stood intact and amounted to 1,000 USD, while in the meantime the EUR/USD exchange rate changed from 1.00 EUR to 1.20 EUR. In such a circumstance, in its balance sheet the company would report a cash balance, amounting to 1,000 EUR [= 1,000 USD × 1.00 EUR] as at the end of the first period and 1,200 EUR [= 1,000 USD × 1.20 EUR] as at the end of the following period. Thus, a period-to-period change in a carrying amount of cash and cash equivalents, inferred from the company's balance sheet, would amount to 200 EUR. However, there were no any real cash inflows of that amount. Instead, an increase in a reported cash balance reflects a pure currency translation effect. Since a primary purpose of a cash flow statement is to present a breakdown

of corporate cash inflows and outflows, it is adjusted for such non-cash currency translation effects.

An another common cause of the observed discrepancies between changes in cash, as seen in a balance sheet and in a cash flow statement, is an inclusion of some cash and cash equivalents within assets held for sale. Suppose that a hypothetical company intends to dispose of its controlling interests in one of its subsidiaries. In such a case it reclassifies all assets of that subsidiary, to a single line item of its consolidated balance sheet, labeled as assets held for sale. Thus, if the subsidiary holds any cash balances, they will be excluded from the parent's consolidated cash and cash equivalents and included within its assets held for sale. However, a resulting decrease in a carrying amount of the parent's reported consolidated cash balances is driven by a reclassification of its subsidiary to assets held for sale (instead of any real cash outflows). Since a primary goal of a cash flow statement is to present a breakdown of corporate cash inflows and outflows, it is adjusted for such non-cash reclassification effects.

Table 1.13 contains an extract from consolidated cash flow statement of Volkswagen Group, summing up the company's total net cash flows in fiscal years 2007 and 2008. As may be seen, a net change in cash and cash equivalents had a positive amount in 2007 and negative amount in 2008. In both periods the company spent significant amounts on its investing activities. Also, in both years its cash generated by operating activities was insufficient to cover all of its investing expenditures (particularly in fiscal year 2008). However, positive cash flows from financing activities (primarily resulting from an increasing indebtedness) enabled investing more than the amounts generated on operations, without any significant drainage of the company's total cash balances.

It is also worth noting that a net change in cash and cash equivalents in fiscal year 2008, as reported in the Volkswagen Group's cash flow statement (i.e. -471 EUR million), differed from a change in cash and cash equivalents, as inferred from the company's consolidated balance sheet (presented in Table 1.6 earlier in the chapter). Cash and cash equivalents, reported on the VW's balance sheet, amounted to 10,112 EUR million and 9,474 EUR million, as at the end of 2007 and 2008, respectively. Accordingly, the balance sheet-based period-to-period change

Table 1.13 Consolidated net cash flows of Volkswagen Group in fiscal years 2007 and 2008

In EUR million	2007	2008
Cash and cash equivalents at beginning of period	9,367	9,914
Cash flows from operating activities	15,662	10,799
Investing activities	-15,812	-19,280
Cash flows from financing activities	787	8,123
Effect of exchange rate changes on cash and cash equivalents	-90	-113
Net change in cash and cash equivalents	547	-471
Cash and cash equivalents at end of period	9,914	9,443

Source Annual report of Volkswagen Group for fiscal year 2008

in cash and cash equivalents amounted to –638 EUR million. A resulting discrepancy, amounting to 167 EUR million, did not stem from any exchange rate effects, since they were already taken into account in a bottom part of the company's cash flow statement. Perhaps an explanation of its origin may be found in Note 23 to the Volkswagen Group's financial statements, which offers some additional insights into a composition of the company's assets classified as held for sale.

1.6 EXERCISE—Preliminary Review of Income Statement, Balance Sheet and Cash Flow Statement of Lumentum Holdings

1.6.1 Tasks and Questions

Based on the consolidated financial statements, included in the annual report of Lumentum Holdings Inc. for fiscal year ended June 30, 2018, conduct a preliminary review of the company's income statement, balance sheet, and cash flow statement:

1. Preliminary review of the company's income statement for fiscal years 2016, 2017, 2018:
 - (i) Did the company's **sales revenues** grow or contract in the analyzed three years? What was the percentage change of its revenues between fiscal years 2016 and 2018?
 - (ii) Was the company's **gross profit on sales** changing in tune with changes of revenues (i.e. growing when revenues grew/falling when revenues fell)? What was the percentage change of the company's gross profit on sales between fiscal years 2016 and 2018 (if it grew, then was its growth faster or slower than the revenue growth)?
 - (iii) Was the company's **profit on sales** [$= \text{Gross profit} - \text{R&D expenses} - \text{Selling, general and administrative expenses}$] changing in tune with changes of revenues (i.e. growing when revenues grew/falling when revenues fell)? What was the percentage change of the company's profit on sales between fiscal years 2016 and 2018 (if it grew, then was its growth faster or slower than the revenue growth)?
 - (iv) Did the company's **operating profit** differ significantly from its **profit on sales**? If yes, then in which periods the difference was particularly significant? In which of the three years (if any) was the operating profit higher than profit on sales?
 - (v) Was the company's **operating profit** changing in tune with changes of revenues (i.e. growing when revenues grew/falling when revenues fell)? What was the percentage change of the company's gross profit on sales between fiscal years 2016 and 2018 (if it grew, then was its growth faster or slower than the revenue growth)?

- (vi) Did the company's **pre-tax profit** (income before income taxes) differ significantly from its **operating profit**? If yes, then in which periods the difference was particularly significant? In which of the three years (if any) was the pre-tax profit higher than operating profit?
- (vii) Were the company **net (after-tax) earnings** negative in any of the three investigated years? If yes, then what was the main factor responsible for the incurred loss?

2. Preliminary review of the company's balance sheet for fiscal years 2017 and 2018:

- (i) Did the company's **total assets** grow or fall between the analyzed two years? What was the percentage change of its total assets between the end of fiscal years 2017 and 2018?
- (ii) Does the company own more **current assets** or **noncurrent assets**?
- (iii) What was the company's most valuable (in terms of its book value reported on the balance sheet) individual asset class at the end of fiscal year 2017 and at the end of fiscal year 2018?
- (iv) Does the company hold significant (i.e. more than 10% of total assets) non-cash operating current assets, i.e. **inventories** and **receivable accounts**?
- (v) What was the company's most valuable (in terms of its book value reported on the balance sheet) individual class of **noncurrent (fixed) assets**, as at the end of fiscal year 2017 and at the end of fiscal year 2018?
- (vi) Did the company's **total equity** grow or fall between the analyzed two years? What was the percentage change of its total equity between the end of fiscal years 2017 and 2018? Did the **equity** grow faster or slower than **total assets**?
- (vii) Were the company's **retained earnings** positive or negative at the end of both investigated years? Did the book value of retained earnings grow or fall between the ends of both analyzed years? What was the share of retained earnings in total equity at the end of fiscal year 2018 (did it exceed 20%)?
- (viii) Did the company's **total liabilities** grow or fall between the analyzed two years? What was the percentage change of its total liabilities between the end of fiscal years 2017 and 2018? Did the **liabilities** grow faster or slower than **total assets**?
- (ix) Did the company have any financial debts (borrowings), i.e. non-operating liabilities, at the end of both investigated fiscal years?
- (x) What was the company's most valuable (in terms of its book value reported on the balance sheet) individual class of **current (short-term) liabilities**, as at the end of fiscal year 2017 and at the end of fiscal year 2018?

- (xi) What was the company's most valuable (in terms of its book value reported on the balance sheet) individual class of **noncurrent (long-term) liabilities**, as at the end of fiscal year 2017 and at the end of fiscal year 2018?
- 3. Review of the company's operating cash flows (OCF) in fiscal years 2016, 2017, 2018:**
- (i) Did the company reported negative **operating cash flows** (always a “red flag”, if negative) in any of the three investigated fiscal years?
 - (ii) Did the company's **operating cash flows** grow or fall in the analyzed three years? What was the percentage change of its OCF between fiscal years 2016 and 2018?
 - (iii) What was a total monetary contribution (summed for the three analyzed years) of **depreciation and amortization** into the Lumentum's total operating cash flows (also summed for all three years)? Was this contribution significant?
 - (iv) What was a total monetary contribution (summed for the three analyzed years) of **changes in receivables** into the Lumentum's total operating cash flows (also summed for all three years)? Was this contribution significant?
 - (v) What was a total monetary contribution (summed for the three analyzed years) of **changes in inventories** into the Lumentum's total operating cash flows (also summed for all three years)? Was this contribution significant?
 - (vi) What was a total monetary contribution (summed for the three analyzed years) of **changes in payables** into the Lumentum's total operating cash flows (also summed for all three years)? Was this contribution significant?
 - (vii) What was a contribution of **net change in working capital** [= *Change in Receivables + Change in Inventories + Change in Payables*] into the Lumentum's total operating cash flows in its last fiscal year (2018)? Was this contribution significant?
- 4. Review of the company's investing cash flows (ICF) in fiscal years 2016, 2017, 2018:**
- (i) Were the company's **investing cash flows** positive or negative in the three investigated fiscal years?
 - (ii) Could the company's cumulative **capital expenditures (CAPEX)** on operating fixed assets be fully funded from its operating cash inflows (i.e. were the summed operating cash inflows in all three years higher than the summed expenditures on operating fixed assets in the same three years)?
 - (iii) Did the company incur any significant investing expenditures on **financial (non-operating) assets** in the investigated fiscal years? Did the company report any significant proceeds from disposals of such non-operating assets in the same three periods?
- 5. Review of the company's financing cash flows (FCF) in fiscal years 2016, 2017, 2018:**
- (i) Were the company's **financing cash flows** positive or negative in the three investigated fiscal years?

- (ii) If the company's cumulative (i.e. summed for all three years) financing cash flows were positive, than what was a single most significant contributor to those positive FCF?
 - (iii) Did the company obtain any significant proceeds from issuance of new equity shares in the investigated three fiscal years?
 - (iv) Did the company make any significant dividend payouts in the investigated three fiscal years?
6. **Review of the structure of the company's total cash flows in fiscal years 2016, 2017, 2018:**
- (i) Were the company's **total cash flows** (i.e. sums of operating, investing and financing cash flows) positive or negative in the three investigated fiscal years?
 - (ii) If the company's total cash flows were positive in the investigated three years, then by how much (in monetary terms) they boosted the Lumentum's cash balances between the beginning of its fiscal year 2016 and the end of its fiscal year 2018?
 - (iii) Which of the **eight combinations of cash flows** (i.e. Scenarios 1–8 discussed in the chapter) was representative for the Lumentum Holdings in its three investigated fiscal years? Was it consistent with the company's business profile, revenue growth and total asset growth?

1.6.2 Answers

1. **Preliminary review of the company's income statement for fiscal years 2016, 2017, 2018:**
- (i) The Lumentum's sales revenues grew systematically in the analyzed three years. They rose by 38.2% (i.e. from 903.0 USD million to 1,247.7 USD million) between fiscal years 2016 and 2018.
 - (ii) Yes, gross profit on sales rose in tune with growing revenues. Between fiscal years 2016 and 2018 it increased by 55.8% (i.e. from 277.3 USD million to 432.1 USD million), so its growth was faster than the revenue growth.
 - (iii) The company's profit on sales [= *Gross profit – R&D expenses – Selling, general and administrative expenses*] in fiscal year 2016 amounted to 18.9 USD million [= 277.3 – 141.1 – 117.3] and in fiscal year 2018 it amounted to 147.1 USD million [= 432.1 – 156.8 – 128.2]. Accordingly, it rose almost sevenfold, in tune with rising sales revenues (but much faster than revenues).
 - (iv) Operating profit in fiscal years 2016, 2017 and 2018 amounted to 11.5 USD million, 47.6 USD million and 139.9 USD million, respectively. In the same three years, the Lumentum's profit on sales amounted to 18.9 USD million, 59.6 USD million and 147.1 USD million, respectively. Accordingly, in all three investigated periods the profit on sales exceeded

- operating profit. But the discrepancies between these two profit levels were not very significant.
- (v) Yes, operating profit rose in tune with growing revenues. Between fiscal years 2016 and 2018 it increased from 11.5 USD million to 139.9 USD million. Accordingly, it rose more than tenfold, in tune with rising sales revenues (but much faster than revenues).
 - (vi) Yes, it did differ significantly in fiscal year 2017, when the company reported pre-tax loss amounting to 59.8 USD million, despite generating operating profit of 47.6 USD million (but in the adjacent two years the differences between these profit numbers were not very significant). However, in none of the analyzed three years the pre-tax earnings exceeded the operating profit.
 - (vii) Yes, the company incurred a net (after-tax) loss in its fiscal year 2017. The main factor responsible for it was the huge “*Unrealized loss on derivative liabilities*” which depressed earnings in that period by as much as 104.2 USD million (while in the remaining two years it contributed insignificantly to the reported earnings).

2. Preliminary review of the company’s balance sheet for fiscal years 2017 and 2018:

- (i) The company’s total assets grew between the analyzed two years, by 28.3% (i.e. from 1,232.9 USD million to 1,581.5 USD million).
- (ii) The company holds more current assets (as compared to noncurrent ones), since they constitute 71.3% of total assets (= 1,127.2 USD million/1,581.5 USD million), as at the end of fiscal year 2018.
- (iii) The Lumentum’s most valuable (in terms of book value) individual asset class, as at the end of fiscal year 2017 was “*Short-term investments*”. One year later the most valuable class was “*Cash and cash equivalents*”.
- (iv) Yes, at the end of fiscal year 2019 receivable accounts constituted more than 10% of total assets, since their share equaled 12.5% (= 197.1/1,581.5). Also inventories constituted almost 10% of total assets at the end of fiscal year 2018 (= 153.6/1,581.5), while one year before their share in total assets stood at 11.8% (= 145.2/1,232.9).
- (v) The Lumentum’s most valuable (in terms of book value) individual class of noncurrent (fixed) assets, as at the end of both fiscal years 2017 and 2018, was “*Property, plant and equipment*”.
- (vi) The company’s total equity grew between the analyzed two fiscal years, by as much as 49.7% (i.e. from 618.8 USD million to 926.1 USD million). Accordingly, the equity rose faster than total assets.
- (vii) While the Lumentum’s retained earnings had a positive book value at the end of fiscal year 2018, their value one year before was negative. Positively, the value of retained earnings rose significantly between the ends of both analyzed years. As a result, the share of retained earnings in total equity, as at the end of fiscal year 2018, stood at 18% (= 166.4/926.1), i.e. still less than 20%.

- (viii) The company's total liabilities grew between the analyzed two fiscal years, but by only 7.1% (i.e. from 578.3 USD million to 619.6 USD million). Accordingly, the total liabilities rose slower than total assets.
- (ix) Yes, the company had financial debts (borrowings) in the form of "*Convertible notes*", amounting to 317.5 USD million and 334.2 USD million as at the end of fiscal years 2017 and 2018, respectively.
- (x) The Lumentum's most valuable (in terms of book value) individual class of current (short-term) liabilities, as at the end of both fiscal years 2017 and 2018, was "*Accounts payable*".
- (xi) The Lumentum's most valuable (in terms of book value) individual class of noncurrent (long-term) liabilities, as at the end of both fiscal years 2017 and 2018, was "*Convertible notes*".

3. Review of the company's operating cash flows (OCF) in fiscal years 2016, 2017, 2018:

- (i) No, the company had positive operating cash flows in each of the three investigated fiscal years.
- (ii) Yes, the company's **operating cash flows** grew in the analyzed three years? By almost 186% (i.e. from +86.6 up to +247.5 USD million) between fiscal years 2016 and 2018.
- (iii) The total monetary amount (summed for all three analyzed years) of **depreciation and amortization** is the sum of three-year depreciation expense of 175.6 USD million [= 47.4 + 54.2 + 74.0] and three-year amortization of intangibles of 17.2 USD million [= 7.2 + 6.8 + 3.2], resulting in 192.8 USD million [= 175.6 + 17.2] in total. Since the total OCF across the same three periods amounted to 419.1 USD million [= 86.6 + 85.0 + 247.5], the depreciation and amortization made up as much as 46% [= 192.8/419.1] of total OCF. So, clearly, the contribution of depreciation and amortization into operating cash flows was significant.
- (iv) The total monetary contribution of changes in receivables was negative and amounted to -48.4 USD million [= -21.8 + 4.2 - 30.8]. It was a significant "consumer" of the Lumentum's cash, since the cumulative increase of receivables (by 48.4 USD million) exceeded 10% of the company's total OCF in those three years (i.e. 419.1 USD million).
- (v) The total monetary contribution of changes in inventories was negative and amounted to -52.5 USD million [= -3.1 - 41.7 - 7.7]. It was a significant "consumer" of the Lumentum's cash, since the cumulative increase of inventories (by 52.5 USD million) exceeded 10% of the company's total OCF in those three years (i.e. 419.1 USD million).
- (vi) The total monetary contribution of changes in payables was positive and amounted to +16.8 USD million [= 28.9 - 16.9 + 4.8]. So it positively contributed to operating cash flows, but this contribution was not very significant, since the cumulative increase of payables (by 16.8 USD million) made up less than 5% of the company's total OCF in those three years (i.e. 419.1 USD million).

(vii) The Lumentum's **net change in working capital** [= *Change in Receivables* + *Change in Inventories* + *Change in Payables*] was negative in its last fiscal year and amounted to -33.7 USD million [= -30.8 - 7.7 + 4.8]. It was a significant "consumer" of the Lumentum's cash, since the net increase in working capital (by 33.7 USD million) exceeded 10% of the company's total OCF in its last fiscal year (i.e. 247.5 USD million).

4. Review of the company's investing cash flows (ICF) in fiscal years 2016, 2017, 2018:

- (i) The company's total **investing cash flows** were negative in all three investigated fiscal years.
- (ii) The Lumentum's cumulative **capital expenditures (CAPEX)** on operating fixed assets, summed for all three years, amounted to -313.3 USD million [= -82.0 - 138.1 - 93.2], as compared to its cumulative (summed for all three years) positive operating cash flows of to 419.1 USD million [= 86.6 + 85.0 + 247.5]. So, yes, the company's cumulative CAPEX could be fully funded from its operating cash inflows.
- (iii) Yes, in its last two fiscal years the company spent significant amounts on "*Purchases of short-term investments*" (more than 0.9 USD billion, cumulatively) and it also obtained significant "*Proceeds from maturities and sales of short-term investments*" (0.6 USD billion in the most recent fiscal year).

5. Review of the company's financing cash flows (FCF) in fiscal years 2016, 2017, 2018:

- (i) The company's total **financing cash flows** were positive in all three investigated fiscal years.
- (ii) The single most significant contributor to the Lumentum's positive FCF was proceeds from the issuance of convertible notes, which amounted to as much as 442.3 USD million in fiscal year 2017.
- (iii) No, the company did not report any significant proceeds from issuance of new equity shares in the investigated three fiscal years.
- (iv) The company made some dividend payouts in all three investigated three fiscal years, but their amounts were rather insignificant, since they totaled only 2.1 USD million [= -0.5 - 0.9 - 0.7].

6. Review of the structure of the company's total cash flows in fiscal years 2016, 2017, 2018:

- (i) The company's **total cash flows** (i.e. sums of operating, investing and financing cash flows) were positive in all three investigated fiscal years.
- (ii) The company's total cash flows (i.e. sum of operating, investing and financing cash flows) boosted the Lumentum's cash balances, between the beginning of its fiscal year 2016 and the end of its fiscal year 2018, by as much as 382.8 USD million [= 142.6 + 115.8 + 124.4], as may be seen in the line item "*Increase in cash and cash equivalents*".
- (iii) In all three investigated fiscal years, the Lumentum Holdings had a combination of positive operating cash flows, negative investing cash flows and positive financing cash flows. Accordingly, the structure of the company's cash flows was representative for Scenario 3, which is "*a common combination among profitable, fast growing and capital-intensive businesses*".

This cash flow structure seems consistent with the company's business profile (manufacturer of smartphone components, belonging to growing and fast-changing high-tech industry), as well as with its growing revenues (which rose by 38.2% between fiscal years 2016 and 2018) and growing total assets (which rose by 28.3% in the last two fiscal years).

References

- Alfredson, K., Leo, K., Picker, R., Loftus, J., Clark, K., & Wise, V. (2009). *Applying International Financial Reporting Standards*. Wiley.
- Barwise, P., Higson, C., Likierman, A., & Marsh, P. (1989). *Accounting for Brands*. London Business School and the Institute of Chartered Accountants in England and Wales.
- Burgstahler, D., Jiambalvo, J., & Shevlin, T. (2002). Do Stock Prices Fully Reflect the Implications of Special Items for Future Earnings? *Journal of Accounting Research*, 40, 585–612.
- Chan, L. K. C., Lakonishok, J., & Sougiannis, T. (2001). The Stock Market Valuation of Research and Development Expenditures. *Journal of Finance*, 56, 2431–2456.
- Cready, W. M., Lopez, T. J., & Sisneros, C. A. (2012). Negative Special Items and Future Earnings: Expense Transfer or Real Improvements? *The Accounting Review*, 87, 1165–1195.
- Dodge, R. (1996). *Group Financial Statements*. Chapman & Hall.
- Fan, Y., Barua, A., Cready, W. M., & Thomas, W. B. (2010). Managing Earnings Using Classification Shifting: Evidence from Quarterly Special Items. *The Accounting Review*, 85, 1303–1323.
- Flower, J., & Ebbers, G. (2002). *Global Financial Reporting*. Palgrave Macmillan.
- Giroux, G. (2006). *Earnings Magic and the Unbalance Sheet. The Search for Financial Reality*. Wiley.
- Hackel, K. S., & Livnat, J. (1996). *Cash Flow and Security Analysis*. Irwin.
- Healy, P. M., Myers, S. C., & Howe, C. D. (2002). R&D Accounting and the Tradeoff Between Relevance and Objectivity. *Journal of Accounting Research*, 40, 677–710.
- Kothari, S. P., Laguerre, T. E., & Leone, A. J. (2002). Capitalization versus Expensing: Evidence on the Uncertainty of Future Earnings from Capital Expenditures versus R&D Outlays. *Review of Accounting Studies*, 7, 355–382.
- Lev, B., & Zarowin, P. (1999). The Boundaries of Financial Reporting and How to Extend Them. *Journal of Accounting Research*, 37, 353–385.
- Nissim, D., & Penman, S. H. (2003). Financial Statement Analysis of Leverage and How It Informs About Profitability and Price-to-Book Ratios. *Review of Accounting Studies*, 8, 531–560.
- Penman, S. H. (2009). Accounting for Intangible Assets: There Is Also an Income Statement. *A Journal of Accounting, Finance and Business Studies*, 45, 358–371.
- Reider, R., & Heyler, P. B. (2003). *Managing Cash Flow: An Operational Focus*. Wiley.
- Schauten, M. B. J., Stegink, R., & De Graaff, G. (2010). The Discount Rate for Discounted Cash Flow Valuations of Intangible Assets. *Managerial Finance*, 36, 799–811.
- Smith, T. (1992). *Accounting for Growth: Stripping the Camouflage from Company Accounts*. Century Business.
- Stutely, R. (2007). *The Definitive Business Plan: The Fast-Track to Intelligent Business Planning for Executives and Entrepreneurs*. FT. Prentice-Hall.
- Tennent, J. (2018). *Guide to Financial Management*. Profile Books.
- Wallman, S. M. H. (1995). The Future of Accounting and Disclosure in an Evolving World: The Need for Dramatic Change. *Accounting Horizons*, 9, 81–91.
- Welc, J. (2020). *Reading Between the Lines of Corporate Financial Reports: In Search of Financial Misstatements*. Palgrave Macmillan.



Notes to Financial Statements as an Important Source of Information for a Financial Statement Analysis

2

2.1 Nature and Purposes of Notes to Financial Statements

Notes constitute an integral part of corporate financial statements. Their main purpose is to provide a more detailed information regarding a given company's revenues, expenses and net assets reported in its primary financial statements. Thus, notes extend a scope of the information disclosed in primary statements. However, they offer not only more detailed numerical data, but also narrative disclosures that cannot be found anywhere in the primary statements. Notes also constitute a source of information about various issues that may be relevant for a given company's financial position but which are not reflected in its primary statements (for instance, its off-balance sheet obligations or contingent liabilities). As such, notes are invaluable in "reading between the lines" of corporate financial statements.

This chapter presents examples of selected notes to financial statements of Volkswagen Group, as well as several other car manufacturers, together with their possible interpretations. However, it must be kept in mind that a following discussion is not exhaustive. Its goal is to briefly guide the reader through selected, most relevant and commonly met notes, rather than to offer an exhaustive manual on how to read and interpret financial statement notes. It is also important to be aware that a professional and diligent investigation of financial statement notes is often more an art than a science (and that it often requires a deep understanding of underlying accounting principles).

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-030-97582-1_2.

2.2 Notes on Sales Revenues

Notes related to corporate revenues typically offer sales breakdowns, e.g. by types of products or by geographical segments. This information is helpful in predicting future sales, evaluating shifts in revenue composition and in assessing a given enterprise's operating risks.

Table 2.1 presents an extract from Note 1 to Volkswagen Group's financial statements for fiscal years 2008 and 2007, extracted from its Annual Report 2008. The note offers a breakdown of the company's sales revenues by product segments. The last row of Table 2.1 sums up the revenues obtained in five individual product and service segments. The numbers presented in this row correspond to sales revenues that are reported in a top line of the VW's income statement (as shown in Table 1.1 in Chapter 1). Thus, Note 1 facilitates an analysis of period-to-period changes in the company's sales breakdown, by its products and services.

As expected, a sale of vehicles constitutes a primary source of Volkswagen Group's total revenues. However, its share fell slightly, from 79.1% in fiscal year 2007 [= 86,159/108,897] to 77.2% one year later [= 87,850/113,808]. A total share of the remaining four segments (i.e. 22.8% in fiscal year 2008) is clearly material and may have a significant impact on the company's operating risks and its future sales growth.

Two line items that follow the item "Vehicles" relate to a broad category of vehicles' parts. Although a line item labeled as "Other sales revenues" does not itself suggest anything about its components, a narrative disclosure offered beneath Note 1 informs that "*Other sales revenue relates primarily to parts and engine deliveries*". Accordingly, for a financial statement analysis, it seems legitimate to treat the two line items labeled as "Genuine parts" and "Other sales revenues" as relating to a single broad segment of vehicle parts. A combined share of these two categories in the company's total revenues grew from 13.1% in 2007 to 13.9% in the following fiscal year.

Finally, the remaining two line items relate to the VW's rental, leasing and financial services. Apart from sales of its vehicles, the company is also engaged in renting and leasing its products to other entities (and perhaps to private persons).

Table 2.1 Extract from Note 1 to financial statements of Volkswagen Group for fiscal year 2008 (Breakdown of the company's sales revenue)

In EUR million	2007	2008
Vehicles	86,159	87,850
Genuine parts	6,512	7,254
Other sales revenues	7,714	8,528
Rental and leasing business	5,311	5,819
Interest and similar income from financial services business	3,201	4,357
	108,897	113,808

Source Annual report of Volkswagen Group for fiscal year 2008

If a given vehicle is rented (or leased) to third parties, then the resulting periodic rental revenues are reported under “*Rental and leasing business*” line item. The same item probably includes also revenues from finance lease contracts (which effectively are similar to an installment sales of vehicles). However, in the case of finance lease contracts, the total payments received are probably broken down into their principal amounts (included in “*Rental and leasing business*”) and a corresponding interest income (reported as “*Interest and similar income from financial services business*”). Unfortunately, the company does not offer any narrative that could confirm such a separation. Anyway, for a financial statement analysis it seems legitimate to treat these two line items as relating to a single broad segment of rental and financial services. A combined share of these two categories in the company’s total revenues grew from 7.8% in fiscal year 2007 to 8.9% one year later.

To sum up, in fiscal year 2008 a share of the VW’s primary segment (vehicles) in the company’s total revenues fell slightly, while both remaining two segments (vehicle parts and rental and financial services) increased their respective shares. Although those shifts in the weights of individual segments in the Volkswagen Group’s total sales could have not seemed dramatic, their possible further continuation might significantly affect the company’s future sales trends, as well as its operating risk profile. For example, revenues from sales of cars (and to a lesser extent revenues from sales of parts) tend to be more cyclical than rental and leasing revenues. Cyclical means a vulnerability of corporate revenues to general business conditions. In contrast to sales of cars, rental and leasing contracts have a long-term nature. Consequently, in their case any predictions of future trends (e.g. on based on the observed prior trends) should be easier and more accurate, as compared to forecasts of car sales (where current sales volumes may be to a large extent unrelated to past sales). Moreover, revenues from already signed rental and lease contracts may be expected to flow to the company even during a recession (however, subject to a credit risk exposure discussed below), since the contractors are obliged to settle their periodic rental and leasing fees, regardless of a state of a general economy. Consequently, deep and sudden falls of the company’s rental and leasing revenues seem rather unlikely. In contrast, its sales of cars may unexpectedly plummet during an economic slowdown, even if in the recent past they grew fast.

The above hypotheses seem to be corroborated by Chart 2.1, that depicts six-year trends of the VW’s revenues from its sales of cars and parts (combined) on one side and from its rental and leasing business on the other side. These data were extracted from respective notes to the VW’s financial statements for fiscal years 2006–2010. The most recent period, included within a time-series presented on the chart, is fiscal year 2010, since in 2011 the company changed a format of a note related to its sales revenues (by adding other segments). As may be seen, between 2005 and 2010 the VW’s revenues in both segments showed evidently increasing trends. However, a rising trend of revenues from rental and leasing business was more stable than a trend of revenues from sales of vehicles and parts. Particularly in fiscal year 2009, in the course of the global economic downturn (that began in

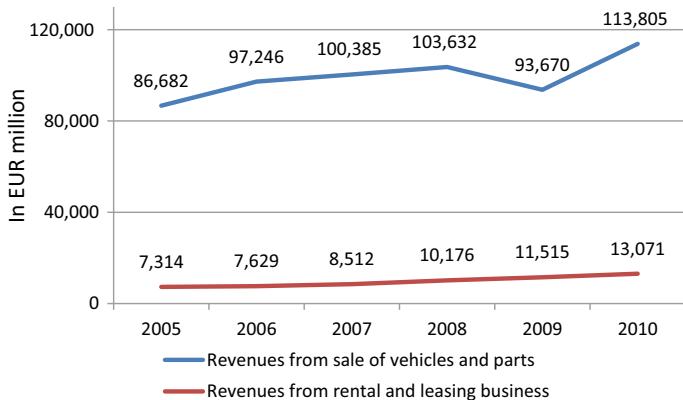


Chart 2.1 Volkswagen Group's revenues from sales of vehicles and parts, as well as from its rental and leasing business, between fiscal years 2005 and 2010 (*Source* Annual reports of Volkswagen Group for fiscal years 2006–2010)

the last quarter of 2008), the company's revenues from sales of cars and parts fell by 9.6% u/u [= 93,670/103,632], while its revenues from rental and leasing business continued their growth and rose by 13.2% y/y [= 11,515/10,176]. In contrast, in the following year the economic conditions improved. Consequently, the VW's sales of cars and parts revived and increased by 21.5% y/y [= 113,805/93,670], as compared to a more moderate growth of 13.5% y/y [= 13,071/11,515] in the case of the company's rental and leasing revenues (it must be kept in mind, however, that those numbers could have been somewhat distorted by the VW's takeovers of other businesses in those periods).

In light of the data presented on the chart, it seems legitimate to conclude that a fall of the vehicle's share in the VW's total revenues (and a corresponding increase in the share of its rental and leasing business), inferred from Note 1 to its financial statements for fiscal year 2008, constituted a stabilizing factor for the company's total revenues. It contributed to a reduction of the company's operating risks, associated with a relatively high unpredictability of its sales of vehicles. Probably, it also increased a predictability of the company's future total revenues. However, it could have entailed some relevant side-effects, in a form of increased operating risks stemming from longer credit terms, associated with the company's rental and leasing business. In a case of vehicle sales, a payment is typically collected either immediately or in a relatively short time (up to twelve months). In contrast, rental and leasing contracts entail an exposure to longer-term credit risk of the company's customers. Thus, from this point of view, the changes of the company's sales breakdown, in fiscal year 2008, contributed to boosting its operating risks associated with a creditworthiness of its contractors.

To sum up, notes related to sales revenues offer an information that is helpful in predicting future sales (in various product or service segments) as well as

in assessing corporate business risks (such as risks associated with a sales predictability or an exposure to credit risk). Therefore, they highly enrich a scrutiny of sales revenues, as compared to a crude and aggregated information disclosed on a face of an income statement.

2.3 Notes on Other Operating Income and Other Operating Expenses

As suggested in Chapter 1, when other operating income or other operating expenses significantly affect corporate reported earnings, they should be carefully scrutinized, with a focus on the following selected issues:

- A relative contribution (to earnings) of those components of other operating results that have a non-recurring nature (as compared to more regularly occurring items).
- A relative significance of those components of other operating results that have a non-cash nature.
- A relative impact (on earnings) of those components of other operating results that are vulnerable to material subjective judgments and estimates (as compared to items that are more objective and less manipulable).

As could have been seen in an income statement of Volkswagen Group for fiscal years 2007 and 2008 (presented in Table 1.1 in Chapter 1), both other operating income as well as other operating expenses significantly affected the company's earnings, reported for those periods. Furthermore, in both years the company's total other operating income surpassed its total operating expenses, positively contributing to a reported operating profit. An excess of the former over the latter amounted to 2,431 EUR million [= 8,770 – 6,339] in 2008 and made up as much as 38.4% of the VW's operating profit (as compared to 25.8% in 2007). Consequently, with such a material and positive contribution of other operating results, it is clearly reasonable to investigate the contents of the respective notes.

Tables 2.2 and 2.3 present Note 5 (Other operating income) and Note 6 (Other operating expense) to VW's financial statements, respectively. A first look at these notes suggests the following preliminary findings:

- In both years the non-cash items, that are also sensitive to subjective judgments and estimates (such as valuation allowances or provisions and their reversals), contributed materially to the reported operating profit.
- In both years, the gains and losses related to foreign currencies (such as foreign currency hedging derivatives) contributed significantly to the reported operating profit.
- In both years, a contribution of the remaining items (except for miscellaneous other operating income and expenses), to the operating profit, seemed weak to moderate.

Table 2.2 Extract from Note 5 to the financial statements of Volkswagen Group for fiscal year 2008 (other operating income)

In EUR million	2007	2008
Income from reversals of valuation allowances on receivables and other assets	369	424
Income from reversal of provisions and accruals	877	1,532
Income from foreign currency hedging derivatives	1,390	2,445
Income from foreign exchange gains	1,093	2,254
Income from sale of promotional material	177	175
Income from cost allocations	903	770
Income from investment property	56	60
Gains of asset disposals	47	29
Miscellaneous other operating income	1,082	1,081
	5,994	8,770

Source Annual report of Volkswagen Group for fiscal year 2008

Table 2.3 Extract from Note 6 to the financial statements of Volkswagen Group for fiscal year 2008 (other operating expenses)

In EUR million	2007	2008
Valuation allowances on receivables and other assets	610	1,021
Losses from foreign currency hedging derivatives	780	1,209
Foreign exchange losses	1,410	2,555
Expenses from cost allocations	202	223
Expenses for termination agreements	94	27
Miscellaneous other operating expenses	1,314	1,304
	4,410	6,339

Source Annual report of Volkswagen Group for fiscal year 2008

- In both years, the net miscellaneous other operating income and expenses had a rather insignificant negative impact on the VW's reported earnings.

Thus, it seems reasonable to group the Volkswagen Group's total other operating income and expenses into three broad categories: (i) valuation allowances and provisions, (ii) currency-related items and (iii) other items. Such a breakdown, together with a monetary contribution of individual categories to the company's operating profit, is displayed in Table 2.4.

As Table 2.4 clearly shows, all three broad categories of the other operating income and expenses (net) contributed positively into the VW's consolidated operating profit, in both 2007 and 2008. Generally speaking, in a financial statement analysis such a circumstance is typically interpreted negatively, since it suggests a limited sustainability of reported operating earnings (meant as high probability of a profit erosion in the following periods). This is so because:

Table 2.4 Net monetary contribution of three broad categories of other operating results into the operating profit of Volkswagen Group in fiscal years 2007 and 2008

In EUR million	2007	2008
Net valuation allowances and provisions ^a	636	935
Net currency-related items ^b	293	935
Net other items ^c	655	561
	1,584	2,431

^aIncome from reversals of valuation allowances on receivables and other assets + Income from reversal of provisions and accruals – Valuation allowances on receivables and other assets

^bIncome from foreign currency hedging derivatives + Income from foreign exchange gains – Losses from foreign currency hedging derivatives – Foreign exchange losses

^cAll items from Notes 5 and 6 (net), not included in neither Net valuation allowances and provisions nor Net currency-related items

Source Annual report of Volkswagen Group for fiscal year 2008

- The valuation allowances and provisions are both heavily subjective (and prone to estimates) as well as to a large extent non-recurring, which means that their positive contributions into an operating profit should be considered as transitory and having a one-off nature.
- The currency-related gains and losses, even if immune to subjective judgments (e.g. when resulting from realized gains and losses), are driven by mostly unpredictable changes in currency rates, that are beyond any firm's control and cannot be expected to occur repeatedly with the same direction.

Consequently, it should be concluded that positive contributions of these two categories of other operating results should not be expected to regularly recur in future (other than by a chance). It is reasonable, therefore, to adjust the reported operating profit for these one-off net gains, to arrive at an approximation of a so-called **sustainable operating profit**. In terms of the remaining items (included within net other items), the investigated notes do not provide any information that is necessary to classify them as either recurring or not (particularly as regards net income from cost allocations that constitutes a primary item in this category). Consequently, for a simplicity the net other items will be treated as part of the VW's sustainable operating profit.

Table 2.5 presents an adjustment of the VW's reported operating profit, for the identified non-recurring items of other its operating income and other operating expenses. As may be seen, the adjustment significantly changes a picture of the company's profit trends. While the reported operating profit showed a slight increase in fiscal year 2008 (by about 3% y/y), the adjusted (sustainable) profit fell by 14.5% y/y. Moreover, in both 2007 and 2008, the adjusted operating profit was lower than the reported one by 15.1 and 29.5%, respectively.

To sum up, notes related to other operating income and other operating expenses offer an information that is very useful in evaluating a sustainability and quality of reported earnings. They often enable making analytical adjustments of reported

Table 2.5 An adjustment of operating profit of Volkswagen Group, reported for fiscal years 2007 and 2008, for non-recurring items of other operating income and other operating expenses

In EUR million	2007	2008
Reported operating profit	6,151	6,333
<i>Less net valuation allowances and provisions</i>	636	935
<i>Less net currency-related items</i>	293	935
Sustainable (adjusted) operating profit	5,222	4,463

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

earnings, aimed at obtaining estimates of more sustainable numbers, that are in turn useful in a profitability analysis (discussed in Chapter 3).

2.4 Notes on Financial Income and Financial Expenses

It was suggested in Chapter 1 that a non-trivial positive contribution of “*Other financial result*” into the VW’s reported profit before tax (i.e. 17.9% in fiscal year 2008) calls for a diligent scrutiny of a content of Note 9. However, this note, that relates to a rather enigmatic and non-obvious line item of the VW’s income statement, seems to be an example of how unclear the notes to corporate financial statements sometimes are.

Table 2.6 presents Note 9 (Other financial result) to the VW’s financial statements, extracted from its annual report for fiscal year 2008. A first inference that emerges from these data is that in 2008 virtually all the company’s other financial

Table 2.6 Extract from Note 9 to financial statements of Volkswagen Group for fiscal year 2008 (Other financial result)

In EUR million	2007	2008
Income from profit and loss transfer agreements	17	20
Cost of loss absorption	16	36
Other income from equity investments	38	45
Other expenses from equity investments	182	35
Income from securities and loans ^a	505	15
Other interest and similar income	976	1,475
Gains and losses from fair value remeasurement and impairment of financial instruments	-49	-244
Gains and losses from fair value remeasurement of ineffective derivatives	45	-52
Gains and losses on hedges	-29	-8
Other financial result	1,305	1,180

^aIncluding disposal gains/losses

Source Annual report of Volkswagen Group for fiscal year 2008

result was attributable to a single item (“*Other interest and similar income*”). However, despite its material impact on the reported pre-tax earnings, the company did not provide any narrative that could inform a financial statement reader about specifics of this enigmatic element of the other financial result (such as its origin, a measurement basis or a scope to which it includes realized vs. unrealized profits). Thus, the only relevant conclusion that may be inferred from this note is that the company’s pre-tax earnings in 2008 (and to somewhat lesser extent in 2007) were boosted by some non-operating items of an unclear nature. Although it would not be justified to mechanically adjust the company’s reported earnings for other interest and similar income (since it is unclear whether this includes non-cash or one-off items), in light of such limited disclosures it seems definitely legitimate to treat it skeptically.

There is one more intriguing issue in Note 9. Namely, in both fiscal years the amounts of individual line items do not sum up to the total other financial result, as presented on the bottom of the note (which is corresponding to the number reported on the face of the company’s income statement). In both periods, the sum of all individual line items exceeds the total other financial result, by 396 EUR million and 142 EUR million in 2007 and 2008, respectively. Accordingly, either there are numerical errors in the amounts reported in some line items or there exist some items of other financial result that are missing in the note. Regardless of whether this uncovered lack of a reconciliation between the sum of individual line items and the total amount is deliberate or unintentional, it clearly weakens a general quality of the note and of the entire financial statement.

2.5 Notes on Intangible Assets

On a face of their balance sheets companies often disclose only a combined carrying amount of all their intangible assets, without separating their types. An only exception is a goodwill resulting from business combinations, that is often reported as a separate line item. Thus, if an analyst wants to investigate types and amounts of individual classes of intangible assets, he or she may find a more detailed information in a respective note.

Volkswagen Group offered such an information in Note 12. This note is quite comprehensive and consists of three tables, that include data about:

- Gross values (i.e. initial costs) of individual classes of intangible assets, as at the end of fiscal years 2006, 2007 and 2008.
- Accumulated amortization and impairment charges of individual classes of intangible assets, as at the end of fiscal years 2006, 2007 and 2008.
- Carrying amounts (i.e. differences between the gross values and the accumulated amortization and impairment charges), as at the end of fiscal years 2007 and 2008.
- Amounts recognized as expenses in an income statement and related to research and development expenditures.

Table 2.7 Extract from Note 12 to financial statements of Volkswagen Group for fiscal year 2008 (carrying amounts of intangible assets)

Carrying amount (in EUR million) at:	Notes on intangible assets	Goodwill	Capitalized costs for products under development	Capitalized development costs for products currently in use	Other intangible assets	Total
Dec. 31, 2007	6	201	1,709	4,373	541	6,830
Dec. 31, 2008	12	2,771	2,426	5,191	1,891	12,291

Source Annual report of Volkswagen Group for fiscal year 2008

Since this note to the VW's financial statements is so comprehensive, only the selected disclosures (related to the carrying amounts of individual classes of intangibles as well as to the expensed research and development expenditures) will be extracted and discussed below.

Table 2.7 presents the carrying amounts of the VW's intangible assets, as at the end of fiscal years 2007 and 2008. As may be seen, the company broke down its total intangibles into five classes. However, it seems legitimate to group them, for analytical purposes, into three categories, that include:

- Goodwill.
- Capitalized development costs (that correspond to products under development as well as to products currently in use).
- Other intangibles (that include concessions, industrial and similar rights, and licenses).

The last column of Table 2.7 corresponds to total carrying amounts of intangible assets, as reported on the face of the VW's balance sheet (presented in Table 1.5 in Chapter 1). It may be seen that the total carrying amount rose by as much as 80% (from 6,830 to 12,291 EUR million), in the course of fiscal year 2008. That growth was attributable to all three broad categories of intangibles. However, by far the largest increase occurred in a case of goodwill. As was discussed in Chapter 1, the goodwill results from business combinations (also termed mergers or acquisitions of other businesses). This means that in 2008 Volkswagen Group must have taken its control over some other businesses. Although an origin of that growth in goodwill cannot be inferred from the numerical data presented in Table 2.7, Note 12 offers an additional narrative information on that issue. According to it, “€2574 million of the goodwill reported as of December 31, 2008 relates to Scania and €151 million to Škoda”. Thus, it may be inferred that the increase in goodwill (by more than 2.5 EUR billion) was entirely attributable to the takeover of Scania, closed in 2008. For a financial statement analysis, it is important to keep in mind that goodwill is not subject to periodic amortization charges. Instead, it is

Table 2.8 Extract from Note 12 to financial statements of Volkswagen Group for fiscal year 2008 (Amounts related to capitalized development costs recognized as expenses)

In EUR million	2007	2008
Research and non-capitalized development costs	3,477	3,710
Amortization of development costs	1,843	1,392
Research and development costs recognized in the income statement	5,320	5,102

Source Annual report of Volkswagen Group for fiscal year 2008

annually tested for a possible impairment. Thus, any investment expenditures, that are capitalized in a carrying amount of goodwill, are not expensed in an income statement, at least until a goodwill impairment is stated. Consequently, from a perspective of a quality of reported earnings, it is always legitimate to assess a reasonableness of a computation of the goodwill (done by a given company on its acquisition of other business), as well as the reasonableness of the impairment test assumptions.

A total carrying amount of the VW's capitalized development costs (both related to its products under development as well as to its products currently in use) rose from 6,082 EUR million [= 1,709 + 4,373], as at the end of 2007, to 7,617 EUR million [= 2,426 + 5,191] one year later. Out of that increase, by 1,535 EUR million [= 7,617 – 6,082], 717 EUR million was attributable to products under development, while the remaining 818 EUR million was attributable to products currently in use. A distinction between the two is essential, since the former are not yet subject to any amortization, while the latter are already periodically amortized. Thus, the capitalized development costs that correspond to the products currently in use are already expensed in an income statement, via an amortization expense. In contrast, the capitalized development costs, related to the products under development, constitute a sort of an asset under construction, and as such they will be amortized only after the research and development process is completed (i.e. once its results are ready to be used). The capitalization and amortization of development costs are an area of a financial accounting that is prone to abuses and manipulations (resulting in possible distortions of reported corporate earnings) and are discussed with more details in some other books (Welc, 2020).

With a reference to its capitalized development costs, Volkswagen Group disclosed in its Note 12 an additional information, regarding their amounts recognized as expenses. They are presented in Table 2.8. As may be seen, the total costs recognized in the company's, income statement (as operating expenses) amounted to 5,320 and 5,102 EUR million in fiscal years 2007 and 2008, respectively. They consisted of two categories of development-related costs:

- Research and non-capitalized development costs—they included expenditures, incurred in a given period, that did not satisfy requirements for their capitalization as intangible assets (and thus were immediately expensed as incurred).

- Amortization of development costs—this constitutes an operating expense that reflects an amortization of previously capitalized development expenditures (i.e. those development expenditures incurred in a past, that satisfied the requirements for capitalization as intangible assets, related to products which are already in use).

It is worth noting that an amount of the amortization of previously capitalized development costs fell from 1,843 EUR million in 2007 to 1,392 EUR million in another year. Given a substantial load of subjective judgments in setting amortization periods for many intangibles (particularly for such “soft assets” as capitalized development costs), such a decline in the amount of an annual amortization expense should be always viewed with skepticism. Although it may be legitimate (for instance, when it turns out at some point that useful lives of capitalized development costs, related to e.g. new models of cars, are longer than previously assumed), it may also stem from deliberate accounting manipulations (e.g. aggressive extensions of the assumed useful lives), aimed at boosting corporate reported earnings.

Apart from the numerical data depicted in Table 2.8, in Note 12 to its financial statements Volkswagen Group disclosed an additional narrative information, related to its development costs. According to it, “*of the total research and development costs incurred in 2008, €2216 million (previous year: €1446 million) met the criteria for capitalization under IFRSs*”. This narrative informs that an amount of development costs, that were incurred in a given period and satisfied the conditions for their capitalization, increased significantly between fiscal years 2007 and 2008. When combined with the numerical data presented in Table 2.8, it constitutes a basis for an evaluation of a scope of the company’s prudence in capitalizing (as intangible assets) vs. expensing (in an income statement) its total R&D-related expenditures.

Finally, a third broad class of Volkswagen Group’s intangible assets captures all its intangibles other than goodwill and capitalized development costs. Its total carrying amount grew from 547 EUR million [= 6 + 541], as at the end of 2007, to 1,903 EUR million [= 12 + 1,891] one year later. Similarly as in a case of goodwill, an origin of that increase could not have been inferred from the sole numerical data, presented in Table 2.7. However, in Note 12 the company provided narrative disclosures, according to which “*other intangible assets in the Automotive Division at the balance sheet date include Scania’s brand name with a carrying amount of €895 million*”. Thus, it may be inferred that an increase in the carrying amount of other intangibles (by 1,356 EUR million) was to a large extent attributable to a takeover of Scania and a resulting recognition of its brand name, acquired as part of this business combination. Additionally, the company stated that “*this figure is not amortized because no useful life can be determined*”. Thus, similarly as in the case of goodwill, it is important to be aware that a carrying amount of this brand name (which is a kind of a “soft” asset) is not recurrently expensed in the VW’s income statement (through its periodic amortization charges), at least until any impairment of its value is stated. Accordingly, from a perspective of a quality

of reported earnings, it is always legitimate to evaluate (if possible) a reasonableness of a brand name valuation (done by a company on its acquisition of another business), as well as a prudence of an impairment test assumptions.

To sum up, notes related to intangibles (that are deemed relatively “soft” assets, as compared to other assets, and thus should always be thoroughly scrutinized) offer an information that is useful in evaluating a credibility and intercompany comparability of reported assets and earnings. Such disclosures are also helpful in making analytical adjustments to reported balance sheet and income statement numbers.

2.6 Notes on Tangible Fixed Assets

Tangible fixed (noncurrent) assets used by businesses typically include:

- Property, plant and equipment (PP&E) owned by a given firm and used in its business operations.
- Property, plant and equipment owned by other entities but used by a given firm under its lease or rental contracts (often reported under a label “right-of-use assets”).
- Non-operating tangible fixed assets, owned, leased or rented by a given company, but unused in its core business operations (and thus often reported as either an investment property or assets held for sale).

Similarly as in a case of intangible assets, on a face of their balance sheets companies often disclose only total carrying amounts of all their PP&Es, without breaking them down into more homogenous sub-categories. Thus, an investigation of various types and amounts of individual classes of PP&E may be carried out on the ground of a more detailed information, disclosed in a respective note.

In its annual report for fiscal year 2008, Volkswagen Group offered such an information in Note 13. Its format and scope are similar to Note 12, dedicated to the company’s intangible assets. Thus, a following information may be found in Note 13:

- Gross values (i.e. initial costs) of individual classes of PP&E, as at the end of fiscal years 2006, 2007 and 2008.
- Accumulated depreciation and impairment charges of individual classes of PP&E, as at the end of fiscal years 2006, 2007 and 2008.
- Carrying amounts (i.e. differences between the historical cost and the accumulated depreciation and impairment charges), as at the end of fiscal years 2007 and 2008.

Table 2.9 contains selected data extracted from Note 13 to the VW’s financial statements for fiscal year 2008. Because of a comprehensiveness of that note, only its most crucial disclosures are extracted and presented here.

Table 2.9 Extract from Note 13 to financial statements of Volkswagen Group for fiscal year 2008 (Property, plant and equipment)

Amounts in EUR million:	Land, land rights and buildings, including buildings on third-party land	Technical equipment and machinery	Other equipment, operating and office equipment	Payments on account and assets under construction	Total
Cost					
Balance at Jan. 1, 2007	14,141	24,538	31,311	1,518	71,508
Balance at Dec. 31, 2007	14,424	25,048	32,620	1,836	73,928
Balance at Dec. 31, 2008	16,177	26,553	33,927	3,089	79,746
Depreciation and impairment					
Balance at Jan. 1, 2007	7,214	18,801	25,146	7	51,168
Balance at Dec. 31, 2007	7,545	19,740	27,297	8	54,590
Balance at Dec. 31, 2008	7,923	20,473	28,120	109	56,625
Carrying amount					
Balance at Dec. 31, 2007	6,879	5,308	5,323	1,828	19,338
Balance at Dec. 31, 2008	8,254	6,080	5,807	2,980	23,121

Source Annual report of Volkswagen Group for fiscal year 2008

As may be seen, the company broke down its total PP&E into four more homogenous classes. However, it seems legitimate to group them, for analytical purposes, into three categories, including:

- Real-estate assets (i.e. land and land rights and buildings, including buildings on third-party land).
- Operating equipment (technical, office and other equipment).
- Assets under construction (including prepayments for PP&E).

The former two of these categories captured assets that were already used by the company and were subject to periodic depreciation charges. An exception is land, that is not depreciable (however, it may be impaired) and whose carrying amount is usually equal to the historical cost (unless a given company applies a revaluation model to its PP&E, which is allowed under IFRS). Unfortunately, in its note Volkswagen Group did not separate its land from its depreciable real-estate assets.

Table 2.10 Volkswagen Group's accounting policy toward leasing and rental assets**LEASING AND RENTAL ASSETS**

Vehicles leased out under operating leases are recognized at cost and depreciated to their estimated residual value using the straight-line method over the term of the lease. Impairment losses identified as a result of an impairment test in accordance with IFRS 36 are recognized and the depreciation rate is adjusted. The forecast residual values are adjusted to include constantly updated internal and external information on residual values, depending on specific local factors and the experiences gained in the marketing of used cars

Source Annual report of Volkswagen Group for fiscal year 2008

In contrast, all PP&E classified as an operating equipment (that usually includes the most important tangible fixed assets of manufacturing firms) are subject to periodic depreciation charges. Finally, assets under construction include assets that are not yet depreciated, since they are not yet ready to use.

For all those classes of its PP&E Volkswagen Group disclosed their initial values (cost), accumulated depreciation and impairment, and carrying amounts (i.e. differences between initial values and accumulated depreciation and impairment). With some simplifying assumptions, such an information may be used in analyzing (and comparing between companies) the following aspects of the PP&E's management:

- Average useful lives determined by a given company for its PP&E.
- Average age of a given entity's PP&E.

Other classes of tangible fixed assets, reported on a face of the VW's balance sheet, include leasing and rental assets as well as investment property. In Chapter 1 an issue was raised on whether the leasing and rental assets represented assets owned by other entities (lessors) but used by Volkswagen Group under its lease contracts (or rental contacts similar in substance to lease) or the assets owned by the company itself but used by other entities under the lease contracts (or rental contacts similar in substance to lease). A descriptive information about the VW's leasing and rental assets and investment property is disclosed in Note 14. A brief narrative provided in that note informs that "*leasing and rental assets include assets leased out under the terms of operating leases*". Thus, it is now clear that this line item of the VW's balance sheet included assets owned by the company but used by other entities under operating lease contracts. However, a more detailed information about their nature could have been found in other part of the company's annual report, which contained a description of the company's significant accounting policies. Such a description constitutes an integral part of annual report and is typically located between primary financial statements and the following notes. Table 2.10 cites the VW's explanation of its accounting policy applied to its leasing and rental assets.

A content of a narrative information quoted in Table 2.10 informs that the VW's balance sheet item, labeled as leasing and rental assets, included vehicles owned by

Table 2.11 Extract from Note 14 to financial statements of Volkswagen Group for fiscal year 2008 (Leasing and rental assets and investment property)

Amounts in EUR million:	Leasing and rental assets	Investment property	Total
Cost			
Balance at Jan. 1, 2007	10,478	300	10,778
Balance at Dec. 31, 2007	10,903	301	11,204
Balance at Dec. 31, 2008	12,695	305	13,000
Depreciation and impairment			
Balance at Jan. 1, 2007	2,592	147	2,739
Balance at Dec. 31, 2007	2,724	149	2,873
Balance at Dec. 31, 2008	2,806	155	2,961
Carrying amount			
Balance at Dec. 31, 2007	8,179	152	8,331
Balance at Dec. 31, 2008	9,889	150	10,039

Source Annual report of Volkswagen Group for fiscal year 2008

the company and leased out to other entities under operating lease contracts. The company depreciated those vehicles over the term of the lease, with depreciable amounts determined as differences between their historical costs and forecasted residual values (i.e. expected marketable values of the used cars).

Volkswagen Group reported its leasing and rental assets in a separate line item of its balance sheet. However, a respective note (Note 14) contains also an information about the company's investment property. A format and scope of this note is similar to Note 13, related to PP&E. Selected data extracted from Note 14 are displayed in Table 2.11.

As may be seen, the initial values as well as carrying amounts of leasing and rental assets were in a rising trends in both investigated periods. This seems consistent with an information disclosed in Note 1 (on a breakdown of the company's revenues), that showed a growing share of the VW's rental and leasing business in its total sales. Rising revenues from the rental and leasing business required adequate investments on related assets (i.e. vehicles that were leased out or rented out). In light of an increasing contribution of that business segment into the VW's total revenues, it is legitimate to treat its leasing and rental assets as operating ones, since for the company they have the same economic substance as other PP&E (in contrast to e.g. investment property, that is unrelated to the VW's core business operations). Similarly as in a case of PP&E, an information disclosed in Note 14 enables an analysis (with some limitations) of the following aspects of the leasing and rental assets:

- Assets' average useful lives.
- Assets' average age.

As regards the VW's investment property, it may be seen that its carrying amount was rather insignificant for its financial performance. A similar conclusion could have been inferred from the face of the company's balance sheet. Consequently, there seems to be no reason to scrutinize those assets more rigorously. However, when such assets have material carrying amounts, then it is recommendable to investigate the following issues (on the ground of an information disclosed in respective notes):

- A given company's accounting policy applied to its investment property, i.e. whether it is reported at historical cost or instead revalued periodically to fair values (since both alternatives are permitted under IFRS).
- Amounts of revaluation gains and losses (if any), reported by a given entity in its income statement in the analyzed periods (if it revalues its investment property to fair values, through profit or loss).
- Critical assumptions underlying the revaluations of its investment property (e.g. applied discount rates, assumed rental rates, etc.).
- Authorship of the appraisals that formed a basis for the revaluations of the investment property (i.e. whether such appraisals were conducted by some external and independent experts or by a given company itself).

2.7 Notes on Receivable Accounts

As was noted in Chapter 1, receivable accounts constitute one of major classes of Volkswagen Group's consolidated assets. The company's financial services receivables (both noncurrent and current), combined with trade receivables, made up as much as 40.0 and 38.6% of the VW's total assets, as at the end of 2007 and 2008, respectively. Such a significant weight of receivables is not uncommon for manufacturing and service companies. Thus, it is always advisable to rigorously scrutinize this component of corporate assets. A relevance of receivable accounts in a financial statement analysis is strengthened by their sensitivity to subjective estimates (such as allowances for doubtful accounts) as well as by their impact on corporate financial liquidity and solvency.

Obviously, crude carrying amounts reported on a face of balance sheet are insufficient for a detailed analysis of credit risks and a quality of any company's receivables. For example, receivable accounts are reported at their net carrying amounts, i.e. differences between their gross amounts (initial values resulting from such documents as invoices or contracts) and estimated allowances for bad debts. The balance sheet itself is silent about the amounts of the latter. However, a more detailed information, that enables an evaluation of a given firm's credit risks associated with its receivables (as well as a prudence of its estimates of allowances for bad debts), may be found in respective notes to financial statements. Likewise, on the face of balance sheet the receivable accounts are split into their current and noncurrent portions, where noncurrent receivables typically include those accounts

that are expected to be collected in more than twelve months from a reporting date. Thus, for the balance sheet classification it is irrelevant whether a payment term of a given receivable account is two, five or maybe ten years from now, since all receivables with such remote payment terms fall into the same category of long-term receivables. Consequently, a term structure of receivable accounts may be inspected only with the use of more detailed data extracted from respective notes. Thus, if only receivables constitute a significant component of total assets, the respective notes should be investigated.

An information about the Volkswagen Group's receivable accounts is dispersed across multiples sections of its annual report for fiscal year 2008, including Notes 16, 17 and 18 (as suggested in the company's balance sheet). Given an importance of this asset class for the VW's operations and financial standing, our investigation will not be limited to those three notes only. Instead, a related information, disclosed in other sections of the company's financial report, will be examined as well.

As may be inferred from Volkswagen Group's consolidated balance sheet, the company's financial services receivables (noncurrent and current ones, combined) constituted the most significant (in terms of monetary amount) class of its total assets. Their total book value amounted to 52,436 EUR million (36.1% of total assets) and 58,890 EUR million (35.1% of total assets) at the end of fiscal years 2007 and 2008, respectively. As was suggested in Chapter 1, such a high share of the financial services receivables may seem somewhat surprising for a car manufacturer, since typically non-financial businesses are expected to report material trade receivables, rather than financial services receivables. Meanwhile, the reported amounts of the VW's financial services receivables are several times larger than the reported values of its trade receivables. Consequently, it seems obviously reasonable to inspect Note 16 to the company's financial statements. A content of that note is displayed in Table 2.12. Apart from carrying amounts, in this note the company disclosed also its estimates of fair values of individual categories of financial services receivables. However, these fair values are omitted in Table 2.12.

As may be seen, the Volkswagen Group's total financial services receivables came from three primary sources: customer financing, dealer financing and finance lease business. The other two classes of receivables (i.e. from direct banking and operating lease business) had immaterial carrying amounts and therefore may be omitted in our further scrutiny.

It seems obvious from Table 2.12 that majority of the VW's financial services receivables bear an economic substance of operating assets, despite their inclusion within those balance sheet line items that may suggest a lack of their relationship with the company's core business operations (defined as designing, manufacturing and marketing vehicles and related products and services). Receivables related to customer and dealer financing are similar in nature to trade receivables, in a sense that they stem from credits granted to customers and dealers, to support the company's sales. When purchasing a car a customer may be offered an outright deferred payment term (e.g. twelve months) and in such a case a resulting amount,

Table 2.12 Extract from Note 16 to consolidated financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current financial services receivables)

In EUR million	Current	Noncurrent	Carrying amount, Dec. 31, 2007	Current	Noncurrent	Carrying amount, Dec. 31, 2008
Receivables from financing business						
<i>Customer financing</i>	9,531	18,471	28,002	9,534	20,302	29,836
<i>Dealer financing</i>	9,791	774	10,565	10,147	981	11,128
<i>Direct banking</i>	94	0	94	133	0	133
	19,416	19,245	38,661	19,814	21,283	41,097
Receivables from operating lease business	103	0	103	125	0	125
Receivables from finance lease business	5,395	8,277	13,672	7,096	10,572	17,668
	24,914	27,522	52,436	27,035	31,855	58,890

Source Annual report of Volkswagen Group for fiscal year 2008

owed by the customer, falls into trade receivables. However, alternatively the same transaction may be formally split into two allegedly separate and unrelated sub-transactions:

- i. A financial loan (labeled as customer or dealer financing) granted by a seller to its customer.
- ii. A purchase of a product by the customer for cash (that comes from a loan, granted simultaneously by the seller).

Such a division of a single deal, into two seemingly unrelated sub-transactions, results in reporting a related receivable account as a financial services receivable, instead of a trade receivable (which may suggest that it is not related to company's core business operations). However, an economic substance of such financial services receivable is very similar to the ordinary trade receivables (although from a formal point of view they are different). It is simply a credit offered to the customer or dealer, to support the company's sales. Thus, it constitutes a part of the seller's operating assets. If a given company structures majority of its sales transactions in such a way, then its financial services receivables may considerably exceed its reported trade receivables. Indeed, in the VW's case a huge majority of receivables are reported as financial services receivables. However, in a financial statement analysis an economic substance of an asset, instead of its legal form, should matter. For this very reason, further in this book the Volkswagen Group's

financial services receivables will be treated as part of the company's operating assets.

These conclusions are valid for the VW's receivables from the company's finance lease business. From a lessor's perspective, an economic substance of its finance lease transaction is similar to offering a loan to its customer, for a purchase of a product. If the subject of such a finance lease transaction is a product manufactured by the lessor (e.g. a car), then a real nature of the lease becomes identical to a customer financing (although its legal form and perhaps tax consequences differ). This is again just a credit offered to the customer, to support the company's sales. Consequently, similarly as in the case of the VW's customer and dealer financing, further in this book the company's receivables from finance lease business will be treated as part of its operating assets.

As regards a term structure of the Volkswagen Group's financial services receivables, it may be noted that a majority of the receivables from dealer financing mature in less than twelve months. In contrast, the receivables from customer financing as well as from finance lease business have a predominantly long-term nature. The data presented in Table 2.12 are silent about the exact payment terms of these noncurrent receivables. However, in Note 16, the company disclosed additional narrative and tabular information. First, it informed that its "*noncurrent receivables from the customer financing business [...] have terms of up to 84 months (previous year: 84 months)*". Accordingly, a complete collection of a typical receivable account, related to the customer financing, is distributed through seven years [= 84 months/12]. This is a very relevant information for an assessment of the firm's liquidity and solvency, since it means that huge amounts of its reported receivables are expected to be collected relatively far in future (unless it is cashed before, e.g. via factoring transactions). It also gives an answer to a puzzle on why the VW's reported trade receivables are so small, as compared to its financing services receivables. If the average deferred payment terms of trade receivables are shorter than twelve months, while the average maturities of the company's customer financing loans extend to as long as seven years, then a logical result is a much larger build-up of those long-term receivable accounts in the company's balance sheet.

In Note 16, Volkswagen Group also provided a tabular information about a term structure of its receivables from finance leases. Those disclosures are presented in Table 2.13. A number disclosed at the bottom of the last column (17,668) corresponds to a carrying amount of total finance lease receivables, at the end of fiscal year 2008, as shown in Table 2.12. This is the amount that is included within total financial services receivables, reported on the face of the VW's balance sheet. Out of this amount, 7,096 EUR million fall into current receivables, while the remaining portion falls into noncurrent ones. The internal columns of Table 2.13 offer an insight into a term structure of the noncurrent portion of the VW's finance lease receivables. It is clear that virtually all those receivables were expected to be collected until the end of fiscal year 2013. Unfortunately, the company has not offered any additional clues about an expected time distribution of its collection of those accounts (e.g. whether a majority of those receivables mature in 2010

Table 2.13 Extract from Note 16 to financial statements of Volkswagen Group for fiscal year 2008 (Receivables from finance leases at the end of 2008)

In EUR million	2009	2010–2013	from 2014	Total
Future payments from finance lease receivables	7,806	11,586	44	19,436
Unearned finance income from finance leases (discounting)	−710	−1,056	−2	−1,768
Carrying amount/present value of minimum lease payments outstanding at the balance sheet date	7,096	10,530	42	17,668

Source Annual report of Volkswagen Group for fiscal year 2008

or perhaps later on). However, the discussed disclosures contribute to a financial statement reader's knowledge about the credit risk of the VW's receivable accounts, since they inform that probably a non-negligible part of its noncurrent receivables matures relatively far in future (more than two years from a reporting date).

Data from Note 16, depicted in Table 2.13, provide also another interesting information. Namely, they allow comparing carrying amounts of receivables (as they appear on the company's balance sheet) with their nominal values. The latter reflect monetary amounts, derived from finance lease contracts, without any adjustments for a time value of money. In contrast, the former are obtained by discounting those expected nominal payments, to arrive at their present values. Comparing carrying and nominal amounts, particularly if their relation changes significantly from period to period, may be useful in evaluating the company's prudence in reporting receivables.

Transparent notes on receivable accounts should also disclose a reconciliation between their gross values (resulting from invoices or contracts), allowances for doubtful accounts (i.e. impairments for so-called bad debts) and net carrying amounts (i.e. amounts reported on a face of a balance sheet). Accordingly, Volkswagen Group discloses such data in its annual reports. However, they are located far from the core notes related to receivables (e.g. Note 16) and may be found in Note 32, entitled "*Financial risk management and financial instruments*". Section 2 of that note, entitled "*Credit and default risk*", breaks down the gross values of three primary classes of the company's receivables into three categories:

- Neither past due nor impaired.
- Past due and not impaired.
- Impaired.

The receivables, that are neither past due nor impaired, include those accounts in which case the payment terms granted to customers have not yet expired. Typically, such receivables do not qualify for being considered as doubtful (with some exceptions, e.g. when a given customer faces bankruptcy filing). In contrast, impaired receivables capture those non-collected accounts in which case the

Table 2.14 Extract from Note 32 to financial statements of Volkswagen Group for fiscal year 2008 (credit and default risk relating to financial assets)

Gross amounts in EUR million	Neither past due nor impaired	Past due and not impaired	Impaired	Dec. 31, 2007	Neither past due nor impaired	Past due and not impaired	Impaired	Dec. 31, 2008
Financial services receivables	50,298	2,254	1,782	54,334	55,838	2,587	1,923	60,348
Trade receivables	4,747	873	286	5,906	4,724	1,136	388	6,248
Other receivables	14,402	205	406	15,013	11,158	161	242	11,561
	69,447	3,332	2,474	75,253	71,720	3,884	2,553	78,157

Source Annual report of Volkswagen Group for fiscal year 2008

payment term has already expired (which makes them past due) and the company deems a risk of their permanent loss as significant. Although from a legal perspective they still constitute a valid claim against the debtor, for accounting purposes they are written down (impaired), in order to reflect their increased credit risk. As was discussed in Chapter 1, such impairment write-downs of receivables reduce their carrying amounts and are expensed in an income statement (typically through other operating expenses). If, in later periods, the risk of a non-collection diminishes, then those prior impairments may be reversed (in a correspondence with other operating income). However, it is important to keep in mind that the impairment write-downs of doubtful receivables are not accounted for in a mechanical way. Neither all past due accounts must be automatically written down, nor all accounts that are not yet past due should be reported at their gross amounts. Instead, there exists a gray area between the impaired and non-impaired receivables, which means that any amounts of write-downs of “bad debts” must be estimated (sometimes “guesstimated”) by a company itself, often with a significant load of subjective assumptions and judgments. In the VW’s case, it results in a third class of the company’s receivables, which includes its accounts that are past due but not impaired. This is a category of receivables, that for some reasons are not considered by the company as doubtful, regardless of the fact that they are already past due (i.e. their deferred payment terms have expired). It may happen, for instance, that a given customer has a rather bad habit of settling its debts with regular delays. In such a case, most of the receivables from that particular customer become past due, although finally they are always collected (which gives a reason for claiming that they are past due but not impaired). A classification of the VW’s receivables into those three categories is shown in Table 2.14.

As may be seen, out of the combined gross amount of all three classes of receivables (totaling 78,157 EUR million, as at the end of fiscal year 2008), a vast majority was classified as not past due. However, while the total gross receivables

grew in 2008 by 3.9% y/y (from 75,253 EUR million to 78,157 EUR million), the gross amount of total past due accounts (both impaired and not impaired) rose by as much as 10.9%, from 5,805 EUR million [= 3,332 + 2,474] at the end of 2007 to 6,437 EUR million [= 3,884 + 2,553] one year later. Furthermore, the gross value of the past due but not impaired accounts increased even faster, by 16.6% y/y (from 3,332 EUR million to 3,884 EUR million). Those observations are important for an assessment of the quality of the company's reported accounting numbers, particularly in terms of its prudence in estimating allowances for bad debts and their resulting impact on its reported earnings.

In the same section of its annual report for fiscal year 2008, i.e. in Note 32, Volkswagen Group supplemented its disclosures on receivable accounts, by offering an information about a term structure of those of its receivables that are already past due but not yet impaired. An extract from that note is shown in Table 2.15.

As remembered from Table 2.14, the gross values of the VW's past due but not impaired receivables amounted to 3,332 EUR million and 3,884 EUR million, as at the end of fiscal years 2007 and 2008, respectively. Those numbers correspond to gross carrying amounts depicted in the last column of Table 2.15. However, data disclosed in Table 2.15 offer an insight into a term structure of those overdue accounts. It may be seen that while the total gross past due receivables grew in 2008 by 16.6% y/y (from 3,332 EUR million to 3,884 EUR million), the accounts past due by less than one month fell slightly (from 2,609 EUR million to 2,585 EUR million) and the accounts past due by more than one month rose by as much as 79.7% y/y, from 723 EUR million [= 523 + 200] at the end of 2007 to 1,299 EUR million [= 891 + 408] one year later. Although in fiscal year 2008 the

Table 2.15 Extract from Note 32 to consolidated financial statements of Volkswagen Group for fiscal year 2008 (Maturity analysis of gross amounts of financial assets that are past due but not impaired)

In EUR million	Past due by:			Gross carrying amount: Dec. 31, 2007
	up to 30 days	30–90 days	more than 90 days	
Financial services receivables	1,898	351	5	2,254
Trade receivables	589	145	139	873
Other receivables	122	27	56	205
	2,609	523	200	3,332
up to 30 days			more than 90 days	Dec. 31, 2008
Financial services receivables	1,843	584	160	2,587
Trade receivables	668	278	190	1,136
Other receivables	74	29	58	161
	2,585	891	408	3,884

Source Annual report of Volkswagen Group for fiscal year 2008

receivable accounts past due by up to thirty days still dominated within an entire pool of the VW's total past due accounts, such an aging of those assets could have signaled possible problems with either the company's credit risk management policy or with its overly optimistic assumptions applied to its estimates of the allowances for doubtful receivable accounts.

2.8 Notes on Inventories

As was stated in Chapter 1, from an analytical point of view total inventories may be classified into four main classes:

- Non-processed inventory: raw materials and supplies.
- Partially processed inventory: work-in-progress (also labeled as work-in-process).
- Processed inventory: finished goods and merchandise.
- Prepayments for inventories.

However, in their balance sheets firms typically report only a single line item labeled as inventories. In such cases, a breakdown of their total carrying amount, into individual classes, is offered in a respective note (although some national accounting standards may require its presentation on a face of a balance sheet).

When realizable (recoverable) values of inventories fall below their historical costs (which implies an inventory impairment), then their carrying amounts must be written down to estimated realizable values, with a loss resulting from such a revaluation reported in an income statement (usually as part of other operating expenses). However, often the realizable values of inventories are not directly observable. Instead, they must be estimated with a significant load of judgment and assumptions. Thus, it is important to be aware that inventories are sensitive to subjective estimates (such as write-downs), to the same extent as receivable accounts. Unfortunately, notes related to inventories (particularly in terms of their impairment write-downs) are usually less detailed than notes devoted to receivable accounts. This means that an evaluation of a reliability of reported carrying amounts of inventories is often more tricky than in the case of receivables.

Table 2.16 presents data extracted from Note 19 to Volkswagen Group's financial statements for 2008. The numbers depicted on a bottom of the table correspond to carrying amounts of total inventories, as reported in the balance sheet. As may be seen, the company divided its inventories into five classes. Unfortunately, it has not offered any narrative that could explain what types of inventories are labeled as "*current leased assets*".

As may be seen in Table 2.16, although the carrying amount of total inventories rose significantly in fiscal year 2008 (by 27% y/y), that growth was not shared by all individual categories. Specifically, unprocessed inventories (raw materials, consumables and supplies) shrank by almost 10%, while all other categories increased in values. In particular, fully processed inventories (finished goods and purchased

Table 2.16 Extract from Note 19 to financial statements of Volkswagen Group for fiscal year 2008 (Inventories)

In EUR million	Dec. 31, 2007	Dec. 31, 2008
Raw materials, consumables and supplies	2,225	2,009
Work-in-progress	1,365	1,656
Finished goods and purchased merchandise	8,880	12,396
Current leased assets	1,545	1,703
Payments on account	16	52
	14,031	17,816

Source Annual report of Volkswagen Group for fiscal year 2008

merchandise) rose by as much as almost 40%. In case of manufacturing and service businesses such “scissors” between changes of unprocessed and processed inventories are typically interpreted as a signal of a probable upcoming decline of a given firm’s profitability. This issue is discussed with more details in other books (Welc, 2020).

Such a considerable growth of the VW’s total inventories calls for an evaluation of an adequacy of their impairment write-downs. Unfortunately, the company has offered very limited information useful in such an analysis, since it did not disclose any reconciliation between gross amounts (i.e. historical costs), accumulated allowances for write-downs and net carrying amounts of its inventories. It only provided a brief narrative, according to which *“valuation allowances recognized as expenses in the reporting period amounted to €435 million (previous year: €221 million)”*. Accordingly, the company only informed about the amounts of its impairment write-downs, expensed in both reported years (while it was silent about the amounts of accumulated write-downs).

It is worth noting that not all firms are as “parsimonious”, in terms of their disclosures regarding allowances for inventory impairments, as Volkswagen Group. For comparative purposes, Table 2.17 presents inventory data, extracted from a respective note to financial statements of PSA Peugeot Citroën for fiscal year 2008. As may be seen, the French car manufacturer disclosed detailed reconciliations between gross amounts, accumulated allowances and net carrying amounts of individual classes of its inventories. Such an information, if available, is useful in predicting future profitability, as well as in evaluating a scope of a given firm’s prudence in estimating inventory impairments. Selected techniques of such analyses are demonstrated in other books (Welc, 2020).

2.9 Notes on On-Balance Sheet Liabilities

From an economic point of view, all corporate on-balance sheet liabilities (i.e. those obligations that are reported on a face of a balance sheet) may be grouped into two broad classes: financial liabilities and operating payables. A scope of

Table 2.17 Extract from Note 23 to financial statements of PSA Peugeot Citroën for fiscal year 2008 (Inventories)

In EUR million	Dec. 31, 2007			Dec. 31, 2008		
	Gross	Allowance	Net	Gross	Allowance	Net
Raw materials and supplies	853	-137	716	789	-136	653
Semi-finished products and work-in-progress	781	-48	733	676	-46	630
Goods for resale and used vehicles	1,614	-146	1,468	2,016	-314	1,702
Finished products and replacement parts	4,158	-162	3,996	4,952	-180	4,772
TOTAL	7,406	-493	6,913	8,433	-676	7,757

Source Annual report of PSA Peugeot Citroën for fiscal year 2008

detail of their balance sheet presentation varies significantly between firms. While some entities report multiple individual line items of both classes of liabilities, others offer only their total amounts and disclose more detailed information in respective notes. In its consolidated balance sheet for fiscal years 2007 and 2008, Volkswagen Group reported only two line items of its financial liabilities (i.e. noncurrent financial liabilities and current financial liabilities). In contrast, it broke down its total operating payables into more line items (e.g. trade payables and tax payables).

Tables 2.18 and 2.19 present data on the Volkswagen Group's total financial liabilities and total other liabilities, respectively. As may be inferred from Table 2.18, in both 2007 and 2008 a majority of the company's financial obligations came from two categories of financial debt instruments (issued on capital markets): corporate bonds and commercial paper and notes. Their combined share in the VW's total noncurrent and current financial liabilities amounted to 59% at the end of 2008 (as compared to 64% a year earlier). Another two relevant sources of financial liabilities (both with increasing weights) included liabilities to banks and deposits from direct banking business. The remaining classes of the VW's financial liabilities could have been deemed rather immaterial.

As may be seen in Table 2.19, the first line item of the VW's other liabilities captured its deferred revenues, which the company labeled as "*payments on account received in respect of orders*". They correspond to prepayments obtained from customers for ordered goods and services. As was stated in Chapter 1, they do not constitute a liability in a strict sense, since they do not have to be repaid in future. Instead, they reflect the company's commitments to deliver goods or services. When carrying amounts of such deferred revenues are material (e.g. in relation to sales revenues) or when they show noticeable swings from period to period, then they often constitute an informative leading indicator of future changes of a given firm's revenues (and thus also its earnings). In the VW's case, carrying amounts of those prepayments did not seem to be material. However, a decline in their total amount by 3.5% y/y (i.e. from 1,236 EUR million to 1,193 EUR million)

Table 2.18 Extract from Note 25 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current financial liabilities)

In EUR million	Current	Non-current	Carrying amount, Dec. 31, 2007	Current	Non-current	Carrying amount, Dec. 31, 2008
Bonds	6,943	20,364	27,307	7,125	19,672	26,797
Commercial paper and notes	6,924	2,901	9,825	9,274	4,877	14,151
Liabilities to banks	5,082	2,777	7,859	7,918	4,662	12,580
Deposits from direct banking business	8,421	1,199	9,620	10,877	1,958	12,835
Loans	1,058	1,881	2,939	762	1,912	2,674
Bills of exchange	0	–	0	0	–	0
Finance lease liabilities	21	193	214	32	176	208
Financial liabilities to						
affiliated companies	190	–	190	130	–	130
joint ventures	16	–	16	–	–	–
associates	6	–	6	5	–	5
other investees and investors	16	–	16	–	–	–
	28,677	29,315	57,992	36,123	33,257	69,380

Source Annual report of Volkswagen Group for fiscal year 2008

could have signaled a likely upcoming erosion of the company's sales revenues. A usefulness of deferred revenues in forecasting future sales is discussed with more details in other books (Welc, 2020).

Disclosures about a breakdown of corporate financial liabilities may be very important in an evaluation of insolvency risks, particularly in case of firms that face some financial straits. This is so because different classes of debts offer varying scopes of repayment flexibility, meant as a room for renegotiating their terms and conditions, if necessary (particularly in terms of their repayment schedules). For instance, if bank loans are a given entity's primary source of financial liabilities, then its total debts are usually heavily concentrated (i.e. coming from only few lenders). In contrast, if a firm prefers to borrow by issuing corporate bonds and notes, then its total financial liabilities may come from many more investors, both institutional as well as individual. Yet, another form of financing (used by Volkswagen Group) includes deposits from a direct banking business, which are probably featured be even wider dispersion (as compared to corporate bonds and

Table 2.19 Extract from Note 26 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current other liabilities)

In EUR million	Current	Non-current	Carrying amount, Dec. 31, 2007	Current	Non-current	Carrying amount, Dec. 31, 2008
Payments on account received in respect of orders	1,215	21	1,236	1,158	35	1,193
Other liabilities to						
affiliated companies	71	0	71	141	–	141
joint ventures	31	–	31	25	–	25
associates	0	–	0	0	–	0
other investees and investors	1	–	1	0	–	0
Negative fair values of derivative financial instruments	419	258	677	1,189	1,150	2,339
Liabilities relating to						
other taxes	783	372	1,155	751	391	1,142
social security	232	30	262	261	28	289
wages and salaries	1,344	243	1,587	1,444	297	1,741
Miscellaneous liabilities	2,988	1,321	4,309	3,576	1,334	4,910
	7,084	2,245	9,329	8,545	3,235	11,780

Source Annual report of Volkswagen Group for fiscal year 2008

notes). Although the latter two sources of financial liabilities may be cheaper (i.e. entailing lower interest costs), they may also be more rigid. It may be feasible to urgently meet with representatives of several banks, at one table, to renegotiate the terms and conditions of their loans. In contrast, it may be much more tricky to renegotiate the payment terms of corporate bonds issued to thousands of debt investors dispersed worldwide. It may be even more difficult to renegotiate debt terms contracted before with direct banking clients. Thus, a structure of corporate financial liabilities, emerging from respective notes to financial statements, may be very important in evaluating a scope of a given entity's financial flexibility.

Out of all major classes of other liabilities, disclosed in Table 2.19, the largest monetary amount occurs in case of an item labeled as “*miscellaneous liabilities*”. They made up as much as 41.7 and 46.2% of total other liabilities, as at the end of fiscal years 2008 and 2007, respectively. However, in spite of their high

Table 2.20 Extract from Note 17 to financial statements of Fiat Group for fiscal year 2008 (Maturity structure of debt)

In EUR million	At December 31, 2008			
	Due within one year	Due between one and five years	Due beyond five years	Total
Asset-backed financing	4,647	1,845	171	6,663
• Bonds	785	4,642	1,609	7,036
• Borrowings from banks	3,250	2,953	163	6,366
• Payables represented by securities	94	16	—	110
• Other	793	162	249	1,204
Total Other debt	4,922	7,773	2,021	14,716
Total Debt	9,569	9,618	2,192	21,379

Source Annual report of Fiat Group for fiscal year 2008

share and growing carrying amount, the company has not offered any narrative that could inform a financial statement reader about an economic substance of those liabilities.

In its annual report for fiscal year 2008, Volkswagen Group did not disclose any supplementary information about a term structure of its on-balance sheet liabilities (disclosed in Notes 25 and 26), except for splitting them into their current (i.e. payable in the course of the next twelve months) and noncurrent portions. Consequently, a financial statement reader is not able to extract (from the VW's financial statements) any information about the amounts of the company's noncurrent liabilities, that were to be settled in fiscal years 2010, 2011 or later on, even though it could make a difference, for an evaluation of the company's financial standing, whether its corporate bonds (with the carrying amount of their noncurrent portion of 19,672 EUR million, as at the end of 2008) were redeemable entirely in 2010 or in later periods.

Some other firms offer more detailed information in this regard. For illustrative purposes, Table 2.20 exhibits an extract from Note 27 to financial statements of Fiat Group (one of the VW's competitors), with a term structure of its debt, as at the end of fiscal year 2008 (the note contains also analogous data for the end of 2007, which are not presented here). As may be seen, although the company did not disclose the exact amounts payable in individual years, the information that it provided enables making inferences about an expected timing of its future cash outflows, related to its debt settlements. For instance, Fiat Group's total noncurrent debt amounted to 11,810 [= 9,618 + 292] EUR million at the end of 2008, out of which as much as 18.6% [= 2,192/11,810] was repayable as far in future as after five years.

2.10 Notes on Provisions

As stated in Chapter 1, provisions for liabilities are often sensitive to an estimation uncertainty. It means that their carrying amounts may be artificially manipulated, with a distorting impact on reported earnings. Thus, if any investigated firm reports suspiciously large or low amounts of its provisions for liabilities or sharp period-to-period swings in its provisions, a reasonableness of their underlying assumptions should be scrutinized (based on respective notes).

Table 2.21 presents data on Volkswagen Group's noncurrent and current other provisions. Table 2.22, in turn, quotes a narrative information offered in the same note. As may be seen, the company broke down its provisions into three sub-categories: obligations arising from sales, employee expenses and other provisions. Their descriptions, cited in Table 2.22, inform that obligations arising from sales consist mostly of provisions for future expenses, related to product warranties. Their carrying amount rose steadily in both 2007 and 2008, consistent with an increase of the VW's sale of vehicles, components and genuine parts in those periods. Provisions for employee expenses included all provisions for expected future

Table 2.21 Extract from Note 29 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current other provisions)

In EUR million	Obligations arising from sales	Employee expenses	Other provisions	Total
Balance at Jan. 1, 2007	9,152	3,680	3,169	16,001
Balance at Jan. 1, 2008	10,135	3,029	4,394	17,558
Balance at Dec. 31, 2008	10,505	2,820	4,221	17,546

Source Annual report of Volkswagen Group for fiscal year 2008

Table 2.22 Extract from narrative information provided in Note 29 to financial statements of Volkswagen Group for fiscal year 2008 (Noncurrent and current other provisions)

The obligations arising from sales contain provisions covering all risks relating to the sale of vehicles, components and genuine parts through to the disposal of end-of-life vehicles. They primarily comprise warranty claims, calculated on the basis of losses to date and estimated future losses. They also include provisions for discounts, bonuses and similar allowances incurred after the balance sheet date, but for which there is a legal or constructive obligation attributable to sales revenue before the balance sheet date

Provisions for employee expenses are recognized for long-service awards, time credits, the part-time scheme for employees near to retirement, severance payments and similar obligations, among other things

Other provisions relate to a wide range of identifiable risks and uncertain obligations and are measured in the amount of the expected settlement value

Source Annual report of Volkswagen Group for fiscal year 2008

liabilities to the VW's employees, such as jubilee employee-benefits (which the company labeled as long-service awards) or severance payments. Other provisions, as their name suggests, captured all operating provisions other than obligations arising from sales and provisions for employee expenses.

In case of all those three classes of provisions for liabilities, either a timing or a monetary amount of future payments (or both) are highly uncertain and must be estimated, usually with substantial loads of subjective judgments. Thus, an analysis of their carrying amounts, as well as their underlying assumptions, should constitutes an integral part of any earnings-quality evaluation, as discussed in other books (Welc, 2020).

2.11 Notes on Off-Balance Sheet Liabilities and Contingent Obligations

Off-balance sheet liabilities are a given entity's existing financial obligations, that are not reported in its balance sheet. Until 2018, under both IFRS as well as U.S. GAAP, the most typical examples of such liabilities included operating leases and rentals of long-term assets (that, however, are included on-balance sheets since 2019). Contingent liabilities, in turn, reflect potential obligations, which may or may not turn into real liabilities in future. They are contingent on uncertain future events (e.g. court sentences), in which case a probability of an occurrence is estimated to be relatively low.

Both types of liabilities may be dangerous for a firm's financial standing (and even its survival), when they have material amounts. Their exclusion from a balance sheet makes them very important in a financial statement analysis. Numerous seemingly healthy corporations went bankrupt (often unexpectedly for investors and creditors) due to an overload of such off-balance sheet commitments (particularly operating leases). Consequently, they should never be downplayed.

Table 2.23 presents an extract from Note 34 to Volkswagen Group's financial statements for fiscal year 2008, relating to its contingent liabilities. Although the company's total contingent liabilities grew in 2008 by as much as 58% y/y (from 484 EUR million to 765 EUR million), their amounts seemed not to be dangerous

Table 2.23 Extract from Note 34 to financial statements of Volkswagen Group for fiscal year 2008 (Contingent liabilities)

In EUR million	Dec. 31, 2007	Dec. 31, 2008
Liabilities from guarantees	76	78
Liabilities from warranty contracts	27	30
Pledges on company assets as security for third-party liabilities	12	15
Other contingent liabilities	369	642
	484	765

Source Annual report of Volkswagen Group for fiscal year 2008

for the VW's solvency. At the end of fiscal year 2008, the company's total contingent liabilities constituted only 0.5% of its total assets and only about 0.6% of its total on-balance sheet liabilities. Thus, at that time the VW's contingent liabilities did not suggest any concern. However, when contingent liabilities have material amounts, they should be addressed in an analysis of a given firm's indebtedness and financial risks.

In its financial statements for fiscal year 2008, Volkswagen Group did not include any note relating to its off-balance sheet liabilities. Thus, it may be concluded that the company did not have any such liabilities or that their amounts were insignificant for its financial standing. However, for illustrative purposes Table 2.24 presents data extracted from Note 38 to consolidated financial statements of BMW Group (one of the VW's competitors) for fiscal year 2008, relating to the company's operating lease liabilities (which the company labeled as "*other financial obligations*").

BMW Group reports its financial results under IFRS, similarly as Volkswagen Group. Until 2018, those accounting standards (as well as U.S. GAAP) treated operating leases as off-balance sheet liabilities but required disclosing (in notes to financial statements) the so-called minimum lease payments. IAS 17 (*Leases*), effective until 2018, defined minimum lease payments as the payments over the lease term that the lessee is or can be required to make in connection with the leased property. The minimum lease payments excluded lessee's obligations to pay executor costs (such as insurance, maintenance or taxes) and contingent rents. Entities were also obligated to disclose the total of the minimum lease payments, at the end of the reporting period, for each of the following periods:

1. Due in one year or less.
2. Due in more than one year but no more than five years.
3. Due in more than five years.

Such disclosures, relating to operating leases (and similar off-balance sheet commitments), enable an estimation of a discounted value of future lease payments, which (if material) should be added to a given company's on-balance sheet liabilities, to arrive at its total debt. Methods of analytical adjustments of

Table 2.24 Extract from Note 38 to financial statements of BMW Group for fiscal year 2008 (Other financial obligations)

In EUR million	Dec. 31, 2007	Dec. 31, 2008
Nominal total of future minimum lease payments:		
• Due within one year	212	222
• Due between one and five years	575	619
• Due later than five years	683	695
Other financial obligations	1,470	1,536

Source Annual report of BMW Group for fiscal year 2008

reported corporate debts, to include off-balance sheet operating lease obligations, are demonstrated in other books (Welc, 2020).

2.12 Notes on Financial Statement Consolidation, Non-controlling Interests and Business Combinations

As stated in Chapter 1, individual line items of consolidated financial statements contain aggregated revenues, expenses, assets, liabilities and cash flows of a parent company and all of its controlled entities (subsidiaries), after adjusting them for effects of any intra-group transactions (i.e. transactions between the parent and its subsidiaries or between its individual subsidiaries). However, a presence or absence of the control, held by one entity over another one, is not driven by its equity interest (in the latter) alone. For example, IFRS defines the control as the power to govern the financing and operating policies of an entity so as to obtain benefits from its activities and increase, maintain, or protect the amount of those benefits.

The control is generally presumed to exist when a parent company owns, directly or indirectly, a majority of the voting power of another entity. However, this is not a sole criterion, since the control may also exist when the parent company owns one-half or less of the voting power of an entity, but instead obtains power:

- Over more than one-half of the voting rights of the other entity by virtue of agreement with the other investors.
- To govern the financial and operating policies of the other entity, under a statute or agreement.
- To appoint and remove the majority of the board of directors or equivalent governing body of the other entity.
- To cast the majority of votes at meetings of the board of directors or equivalent body.

On the ground of those guidelines companies often claim to control other entities, despite owning less than 50% of voting rights, or they state a lacking control, despite their possession of more than 50% voting rights. An exclusion of any controlled subsidiaries from a consolidation process (or, alternatively, the consolidation of any uncontrolled entities) may significantly distort a reliability of consolidated financial statements. Thus, it is always recommendable to scrutinize carefully an information on the consolidation procedures, applied by an investigated company. Particularly, it is important to check whether:

- Company consolidates any allegedly controlled entities, while holding less than 50% of their voting rights.
- Company excludes from the consolidation any allegedly uncontrolled entities, while holding more than 50% of their voting rights.

- Company controls other entities by possessing only slightly more than 50% of their voting rights.

An existence of the former two circumstances may result in financial statement manipulations, brought about by consolidating results of allegedly controlled subsidiaries (which is equivalent to claiming to control their business operations and net assets, without an actual control over them) or from artificial exclusions of some problematic subsidiaries (e.g. firms that are heavily indebted or incur deep losses). The existence of the latter circumstance, in turn, may distort consolidated financial statements by including entire carrying amounts of individual items of stand-alone financial statements of non-wholly owned subsidiaries, despite being entitled to a less-than-full participation in economic benefits generated by those entities.

Volkswagen Group discloses information about its consolidated subsidiaries in a section of its financial statements, that is entitled "*Basis of consolidation*" and is located between primary financial statements and notes to them. The most relevant extracts from those disclosures are cited in Example 2.1.

According to narratives cited in Example 2.1, in 2008 Volkswagen Group fully consolidated entities over which it had control, excluding some minor subsidiaries that were insignificant for the VW's consolidated financial results (instead, those subsidiaries were reported at either historical cost or fair value). As shown by the enclosed tabular data, Volkswagen Group is a huge group, consisting of as many as 342 [= 54 + 288] fully consolidated entities (as at the end of fiscal year 2008). Although total net assets and total profits of its unconsolidated subsidiaries were insignificant for a group as a whole, the number of such excluded entities seems surprisingly large and equals 135 [= 56 + 79]. Finally, the parent company (Volkswagen AG) held equity interests in 77 [= 25 + 52] companies that it classified as either associates (i.e. under significant influence, but not a control) or joint ventures.

Example 2.1 Information about subsidiaries included in consolidated financial statements of Volkswagen Group (as at the end of fiscal year 2008)

BASIS OF CONSOLIDATION

In addition to Volkswagen AG, the consolidated financial statements comprise all significant companies at which Volkswagen AG is able, directly or indirectly, to govern the financial and operating policies in such a way that they can obtain benefits from the activities of these companies (subsidiaries). The subsidiaries also comprise investment funds and other special purpose entities whose net assets are attributable to the Group under the principle of substance over form. Consolidation of subsidiaries begins at the first date on which control exists and ends when such control no longer exists.

Subsidiaries whose business is dormant or of low volume and that are insignificant for the presentation of a true and fair view of the net assets, financial position and results of operations as well as the cash flows of Volkswagen Group are not consolidated. However, they are carried in the consolidated financial statements at the lower of cost or fair value [...]. The aggregate equity of these subsidiaries amounts to 0.8% (previous year: 0.9%) of Group equity. The aggregate profit after-tax of these companies amounts to -0.1% (previous year: 0.3%) of the profit after-tax of Volkswagen Group.

Significant companies where Volkswagen AG is able, directly or indirectly, to significantly influence financial and operating policy decisions (associates), or directly or indirectly shares control (joint ventures), are accounted for using the equity method. [...]

The composition of Volkswagen Group is shown in the following table:

	2008	2007
Volkswagen AG and consolidated subsidiaries		
Germany	54	42
International	288	133
Subsidiaries carried at cost		
Germany	56	63
International	79	77
Associates, joint ventures and other equity investments		
Germany	25	24
International	52	45
	554	384

The list of all shareholdings can be downloaded from the electronic companies register at www.unternehmensregister.de and from www.volkswagennag.com/ir under the heading "Mandatory Publications" and the menu item "Annual Reports."

Source Annual report of Volkswagen Group for fiscal year 2008.

Example 2.2 Information about a takeover of Scania AB, by Volkswagen Group, in fiscal year 2008.

After receiving the key antitrust approvals, on July 22, 2008, Volkswagen completed the acquisition of all the shares of Scania AB, Södertälje, Sweden [...]. As a result, Volkswagen's share of the voting rights increased by a further 30.62% from 37.98 to 68.60%. Volkswagen's equity interest also rose by 16.84% from 20.89 to 37.73%. Together with 167 subsidiaries, Scania AB

has been included in Volkswagen's consolidated financial statements since that date. [...]

The cost of the business combination that was paid in cash amounted to €2,756 million, including all costs directly attributable to the acquisition. The precise allocation of the purchase price to the assets acquired and liabilities assumed requires detailed examination in view of the size of Scania and is therefore preliminary at present.

€ million	IFRS carrying amounts at the acquisition date	Purchase price allocation (preliminary)	Fair values at the acquisition date (preliminary)
Total assets	10,282	3,739	14,021
Customer relationships	–	374	374
Brand name	–	1,027	1,027
Intangible assets	245	1,179	1,424
Property, plant and equipment	2,027	688	2,715
Leasing and rental assets	1,085	127	1,212
Inventories	1,482	380	1,862
Cash	206	–	206
Other assets	5,237	–36	5,201
Total liabilities	8,096	1,062	9,158
Pension provisions	428	–	428
Other noncurrent provisions	110	–	110
Current provisions	224	–	224
Noncurrent liabilities	2,729	1,062	3,791
Current liabilities	4,605	–	4,605
Equity	2,186	2,677	4,863
Equity attributable to shareholders of Volkswagen AG	825	1,010	1,835
Minority interests	1,361	1,667	3,028

The preliminary goodwill identified at a carrying amount of €2,952 million (translated at the closing rate at the acquisition date) includes non-separable amounts, such as employee knowledge and synergy effects in technology and purchasing.

[...]

Volkswagen acquired a further 3.63% interest in the capital of Scania by the balance sheet date.

Source Annual report of Volkswagen Group for fiscal year 2008.

Not all consolidated subsidiaries were wholly owned by Volkswagen AG. This may be easily inferred from the company's consolidated shareholders' equity (presented in Table 1.9 in Chapter 1), that included a minority (non-controlling) interest with a carrying amount of 2,377 EUR million, as at the end of fiscal year 2008 (as compared to only 63 EUR million one year earlier). Such a huge increase, combined with a rather material monetary amount (about 6.3% of total consolidated equity) calls for an investigation of an origin of those minority interests. A narrative information on that issue is disclosed at the end of Note 24 (Equity) to the VW's financial statements, where the company informed that "*the minority interests in equity are attributable primarily to shareholders of Scania AB*". Thus, in the case of the VW's consolidated financial statements the reported minority interests were almost exclusively associated with its single subsidiary (Scania AB).

All disclosures discussed above are useful in evaluating a reasonableness of the VW's policy toward mergers and acquisitions (e.g. whether the company pays reasonable prices and does not overpay) as well as in assessing a reliability and comparability of the VW's consolidated financial results.

2.13 Notes on Significant Accounting Policies

Even when two or more companies apply the same broad set of accounting standards (e.g. IFRS), their accounting policies may differ significantly. This is so because most accounting regulations offer some choices in terms of accounting policies applied to various classes of revenues, expenses, assets and liabilities. For instance, under IFRS entities have the following options available (among others):

- Property, plant and equipment may be accounted for by either cost model (where assets are initially recorded at cost and then subject to periodic depreciation charges) or revaluation model (where assets are revalued to fair values).
- Depreciable assets may be depreciated on a straight-line basis or with an accelerated depreciation patterns (where in both cases depreciation expense is a function of a passage of time) or in accordance with a so-called natural method (where periodic depreciation charges fluctuate, in tune with changing output volumes).
- Inventories may be accounted for with either FIFO (first-in-first-out) method or weighted-average method (or other methods in some circumstances).
- Investment property and minority interests in non-listed companies may be reported at either historical cost or appraised fair values.

In fact, any item of corporate assets, liabilities, revenues and expenses may be to some extent prone to intercompany accounting differences. Thus, when comparing financial results of various businesses (e.g. competitors), it is always reasonable to judge a scope to which their reported numbers are comparable. When significant accounting differences are detected, then it is advisable to adjust the reported numbers (if possible) to increase their intercompany comparability. When adjusting the incomparable reported numbers is unfeasible (e.g. due to a lack of required data), then it may be sometimes reasonable to abandon a comparative research at all. Otherwise, misleading analytical findings may be obtained, resulting in costly mistakes (e.g. poor stock market investments).

An assessment of a given company's accounting policy constitutes also an important element of an earnings-quality evaluation. Numerous companies, particularly when they are under pressure from investors or creditors, attempt to "cook the books", in order to provide expected financial numbers. In such cases, their managers often select those accounting options that bring their reported results closer to market participants' expectations. Consequently, a knowledge of the accounting approaches applied by a given company is crucial for evaluating a reliability of its reported earnings and net assets.

In annual reports, entities must disclose not only their primary financial statements and related notes, but also a summary of their significant accounting policies. A narrative description of the most important accounting policies, applied by a given firm, is usually located between its primary financial statements and notes to revenues, expenses, assets and liabilities. However, a scope of details offered in these narratives differs between firms. It must also be kept in mind that what a company declares to do is not always what it actually does. Therefore, descriptions of corporate accounting policies, like any other information disclosed in financial reports, should be read with some dose of a reasonable skepticism.

A thorough evaluation of a given company's accounting policy requires a deep knowledge of accounting regulations. It is an advanced topic that lies beyond a scope of this chapter. Accordingly, this section is focused on emphasizing a relevance of intercompany accounting differences (in selected areas of financial reporting), instead of any detailed guidelines on how to assess corporate accounting policies.

An illustration of the intercompany accounting differences will be based on selected extracts from annual reports of nine globally recognized car manufacturers. Six out of those nine companies reported under IFRS (Volkswagen Group, BMW Group, Daimler, Fiat Group, PSA Peugeot-Citroen and Renault), while the remaining three firms reported under U.S. GAAP (Ford Motor Company, Honda Motor Company and Toyota Motor Corporation). A following discussion will deal with three selected accounting issues:

- Capitalization (as intangible assets) vs. expensing of research and development expenditures.
- Accounting for property, plant and equipment.
- Accounting for inventories.

Example 2.3 contains annual report extracts on accounting policies toward research and development expenditures. As was discussed in Chapter 1, IFRS require expensing research expenditures as incurred and capitalizing (as intangible assets) development expenditures. Afterward, i.e. once a given R&D project is successfully completed, its previously capitalized development expenditures are amortized. In contrast, U.S. GAAP (similarly to most accounting standards other than IFRS) require expensing all research and development expenditures as incurred, with no any following amortization expenses. Clearly, in case of those firms that spend large amounts of money on their R&D projects, such accounting differences may entail an incomparability of financial results of even similar businesses. When this is the case, then a comparative financial statement analysis, based on unadjusted reported numbers, may lead to false conclusions (e.g. regarding a relative profitability of various competitors). Consequently, when R&D expenditures are material, then it is crucial to be aware of any intercompany differences in their accounting treatment.

A detailed reading of extracts cited in Example 2.3 leads to the following conclusions:

- All six companies, that applied IFRS, expensed research expenditures and capitalized development ones, while firms reporting under U.S. GAAP expensed all their research and development expenditures as incurred.
- There existed significant accounting differences not only between companies that reported their results under two different accounting systems (IFRS and U.S. GAAP), but also between individual firms that applied IFRS.
- While majority of firms reporting under IFRS capitalized both direct and indirect development expenditures (Volkswagen Group, BMW Group, Daimler, Renault), there were also companies that claimed to capitalize only their direct development costs, while expensing their development overheads (PSA Peugeot-Citroen).
- Companies differed significantly in terms of their declared amortization periods, applied to their capitalized development expenditures:
 - while BMW Group seemed to assume quite uniform amortization period for all its R&D projects (“*generally seven years*”), Daimler provided a much wider range of its expected product life cycles (“*2 to 10 years*”),
 - while most companies amortized their development costs through periods no longer than ten years (Volkswagen Group, Daimler, Fiat Group, PSA Peugeot-Citroen), there were some firms that claimed to set their maximum amortization periods at seven years (Renault).

Clearly, such accounting differences could have deeply eroded a comparability of financial results reported by those global car manufacturers. Although in case of companies that reported under U.S. GAAP a treatment of their R&D expenditures did not pose any comparability and reliability issues, comparing firms that apply differing accounting standards (and even comparing only companies reporting under IFRS) is exposed to much more severe comparability and credibility

issues. It must be kept in mind that capitalization of development costs, required under IFRS, not only distorts the intercompany comparability of reported numbers, but also opens rooms for deliberate earnings manipulations (since it requires many subjective assumptions). A reliability and comparability issues, related to capitalization of development costs, is discussed with more details in other books (Welc, 2020).

Example 2.3 Description of accounting policies related to research and development expenditures of selected car manufacturers.

VOLKSWAGEN GROUP

In accordance with IFRS 38, research costs are recognized as expenses when incurred.

Development costs for future series products and other internally generated intangible assets are capitalized at cost, provided manufacture of the products is likely to bring the Volkswagen Group an economic benefit. If the criteria for recognition as assets are not met, the expenses are recognized in the income statement in the year in which they are incurred.

Capitalized development costs include all direct and indirect costs that are directly attributable to the development process. Borrowing costs are not capitalized. The costs are amortized using the straight-line method from the start of production over the expected life cycle of the models or powertrains developed—generally between five and ten years.

BMW GROUP

Research costs and development costs which are not capitalized are recognized as an expense when incurred. Development costs for vehicle and engine projects are capitalized at manufacturing cost, to the extent that costs can be allocated reliably and both technical feasibility and successful marketing are assured. It must also be probable that the development expenditure will generate future economic benefits. Capitalized development costs comprise all expenditure that can be attributed directly to the development process, including development-related overheads. Capitalized development costs are amortized on a systematic basis, following the commencement of production, over the estimated product life which is generally seven years.

DAIMLER

Development costs are recognized if the conditions for capitalization according to IFRS 38 are met. Subsequent to initial recognition, the asset is carried at cost less accumulated amortization and accumulated impairment losses. Capitalized development costs include all direct costs and allocable overheads and are amortized over the expected product life cycle (2–10 years).

FIAT GROUP

Development costs for vehicle project production [...] are recognized as an asset if and only if both of the following conditions are met: that development costs can be measured reliably and that technical feasibility of the product, volumes and pricing support the view that the development expenditure will generate future economic benefits. [...] Capitalized development costs are amortized on a systematic basis from the start of production of the related product over the product's estimated life, as follows:

	No. of years
Cars	4–5
Trucks and buses	8
Agricultural and Construction Equipment	5
Engines	8–10
Components and Production Systems	3–5

FORD MOTOR COMPANY

Engineering, research and development costs are expensed as incurred when performed internally or performed by a supplier when reimbursement is guaranteed.

HONDA MOTOR COMPANY

Lack of any statement in the company's annual report for 2008.

PSA PEUGEOT-CITROËN

Development expenditure on vehicles and mechanical assemblies (engines and gearboxes) incurred between the project launch (corresponding to the styling decision for vehicles) and the start-up of pre-series production is recognized in intangible assets. It is amortized from the start-of-production date over the asset's useful life, representing up to seven years for vehicles and ten years for mechanical assemblies. The capitalized amount mainly comprises payroll costs of personnel directly assigned to the project, the cost of prototypes and the cost of external services related to the project. No overheads or indirect costs are included, such as rent, building depreciation and information system utilization costs.

RENAULT

Development expenses incurred between the approval of the decision to begin development and implement production facilities for a new vehicle or part (e.g. engine or gearbox) and the subsequent approval of the design for mass production are capitalized as intangible assets. They are amortized on a straight-line basis from the date of approval for production, over the expected market life of the vehicle or part, up to a maximum period of seven

years. Capitalized development expenses mainly comprise the cost of prototypes, the cost of studies invoiced by external firms and a share of overheads dedicated exclusively to development activities.

TOYOTA MOTOR CORPORATION

Research and development costs are expensed as incurred [...]

Source Annual reports of individual companies for fiscal year 2008.

Example 2.4 contains annual report extracts on accounting policies applied to property, plant and equipment (PP&E). Example 2.5, in turn, provides a related information about useful lives assumed by the investigated car manufacturers for their tangible fixed assets. As was stated in Chapter 1, IFRS permits two alternative models of accounting for PP&E: a cost model and a revaluation model. In contrast, U.S. GAAP do not allow for revaluing items of PP&E to their fair values. Entities may also choose from among various depreciation methods (e.g. straight-line or accelerated). Consequently, there may exist significant accounting differences not only between firms that apply different accounting regulations, but also between companies that report their results under the same set of accounting standards.

The following conclusions may be inferred from the extracts cited in Example 2.4:

- None of the analyzed companies applied the revaluation model of accounting for its PP&E, so this option did not impact a comparability of their financial results.
- While majority of firms applied a straight-line depreciation, there were some companies that used one of the accelerated depreciation schedules, known as declining-balance method (Honda Motor Company and Toyota Motor Corporation).

A reading of Example 2.5, in turn, leads to the following findings:

- The companies differed in terms of a scope of detail of their disclosures regarding assumed useful lives of their PP&E: while some of them (e.g. Renault) broke down their PP&E into as many as five classes, others grouped their PP&E into only two categories (e.g. Ford Motor Company, Honda Motor Company and Toyota Motor Corporation).
- Although the cited disclosures do not enable making accurate comparisons of average useful lives, assumed by individual car manufacturers, the following rough suppositions may be inferred from them:
 - while some firms (e.g. Volkswagen Group or BMW Group) apparently applied relatively narrow ranges of depreciation periods for their technical equipment and machinery, others (e.g. Daimler or Toyota) seemed to assume much wider ranges of expected useful lives of those manufacturing assets,

- while some companies depreciated their technical equipment and machinery through periods no longer than ten or twelve years (Volkswagen Group and BMW Group), others assumed much longer useful lives for these assets (Daimler or Fiat Group).

For all those car manufacturers, property, plant and equipment (PP&E) constitute a relevant class of assets. Consequently, related depreciation charges constitute a material category of operating expenses. Thus, significant accounting differences in depreciation methods (e.g. straight-line vs. accelerated), as well as in the assumed useful lives, may reduce a comparability of reported financial results. There exist, however, some simple analytical techniques that enable more quantitative investigations and adjustments of the estimated useful lives (and resulting depreciation expenses) assumed by individual firms. Their application is demonstrated with details in other books (Welc, 2020).

Example 2.4 Description of accounting policies related to property, plant and equipment (PP&E) of selected car manufacturers.

VOLKSWAGEN GROUP

Property, plant and equipment are carried at cost less depreciation and—where necessary—write-downs for impairment. [...] Borrowing costs are recorded as current expenses. [...] Property, plant and equipment are depreciated using the straight-line method over its estimated useful life.

BMW GROUP

All items of property, plant and equipment are considered to have finite useful lives. They are recognized at acquisition or manufacturing cost less scheduled depreciation based on the estimated useful lives of the assets. Depreciation on property, plant and equipment reflects the pattern of their usage and is generally computed using the straight-line method.

Financing costs are not included in acquisition or manufacturing cost.

DAIMLER

Property, plant and equipment are valued at acquisition or manufacturing costs less accumulated depreciation. If necessary accumulated impairment losses will be recognized. [...] Depreciation expense is recognized using the straight-line method. A residual value of the asset is considered.

FIAT GROUP

Property, plant and equipment are stated at acquisition or production cost and are not revalued. Borrowing costs are recognized as an expense in the period in which they are incurred.

FORD MOTOR COMPANY

Property and equipment are stated at cost and depreciated primarily using the straight-line method over the estimated useful life of the asset.

HONDA MOTOR COMPANY

Depreciation of property, plant and equipment is calculated principally by the declining-balance method based on estimated useful lives and salvage values of the respective assets.

PSA PEUGEOT-CITROËN

In accordance with IFRS 16—Property, Plant and Equipment, property, plant and equipment are stated at acquisition or production cost excluding borrowing costs. They are not revalued. Depreciation is calculated on a straight-line basis to write off the acquisition or production cost of the assets, less any residual value, over their estimated useful lives. Property, plant and equipment generally have no residual value, except for rental vehicles.

RENAULT

The gross value of property, plant and equipment corresponds to historical acquisition or production cost. Borrowing costs borne during the final preparation of the assets for use are charged to expenses for the period they are incurred, and are not included in the value of the asset. Depreciation is calculated on a straight-line basis [...]

TOYOTA MOTOR CORPORATION

Property, plant and equipment are stated at cost. [...] Depreciation of property, plant and equipment is mainly computed on the declining-balance method for the parent company and Japanese subsidiaries and on the straight-line method for foreign subsidiary companies at rates based on estimated useful lives of the respective assets according to general class, type of construction and use.

Source Annual reports of individual companies for fiscal year 2008.

Example 2.5 Useful lives of property, plant and equipment assumed by selected car manufacturers.

VOLKSWAGEN GROUP

Depreciation is based mainly on the following useful lives:

	Useful life
Buildings	25–50 years
Site improvements	10–18 years
Technical equipment and machinery	6–12 years
Other equipment, operating and office equipment, including special tools	3–15 years

BMW GROUP

Systematic depreciation is based on the following useful lives [...]:

In years	
Factory and office buildings, distribution facilities and residential buildings	8–50
Plant and machinery	5–10
Other equipment, factory and office equipment	3–10

DAIMLER

Property, plant and equipment are depreciated over the following useful lives:

Buildings and site improvements	10–50 years
Technical equipment and machinery	6–26 years
Other equipment, factory and office equipment	2–30 years

FIAT GROUP

Depreciation is calculated on a straight-line basis over the estimated useful life of the assets as follows:

	Depreciation rates (%)
Buildings	2.5–10
Plant and machinery	5–20
Industrial and commercial equipment	15–25
Other assets	10–33

FORD MOTOR COMPANY

Useful lives range from 3 to 36 years. The estimated useful lives generally are 14.5 years for machinery and equipment and 30 years for buildings and land improvements

HONDA MOTOR COMPANY

The estimated useful lives used in computing depreciation and amortization of property, plant and equipment are as follows:

Asset	Life
Buildings	3–50 years
Machinery and equipment	2–20 years

PSA PEUGEOT-CITROEN

The main useful lives of property, plant and equipment are as follows:

(In years)	
Buildings	20–30
Plant and equipment	4–16
Computer equipment	3–4
Vehicles and handling equipment	4–7
Fixtures and fittings	10–20

RENAULT

Depreciation is calculated on a straight-line basis over the following estimated useful lives:

Buildings	15–30 years
Specific tools	2–7 years
Machinery and other tools (other than press lines)	5–15 years
Press lines	20–30 years
Other tangible assets	4–6 years

TOYOTA MOTOR CORPORATION

The estimated useful lives range from 2 to 65 years for buildings and from 2 to 20 years for machinery and equipment

Source Annual reports of individual companies for fiscal year 2008

Example 2.6 contains extracts related to accounting policies applied by selected car manufacturers to their inventories. As may be seen, there is a substantial diversity of methods adopted by those firms. Some of them used FIFO (Fiat Group, Honda Motor Company, PSA Peugeot-Citroen, Renault), while some of them applied weighted-average cost method (Volkswagen Group, BMW Group, Daimler). Still others applied a mix of several approaches, including LIFO, that is permitted under U.S. GAAP but is prohibited under IFRS (Ford Motor Company, Toyota Motor Corporation).

In periods of stable prices of production inputs any intercompany differences in the accounting methods, applied to inventory, do not pose serious comparability issues. However, the market prices of many of those inputs (e.g. steel or plastic components) tend to fluctuate. In periods of rising prices, relatively high profits are reported under FIFO method (where cost of goods sold includes the oldest and thus the cheapest inventory), while LIFO method generates relatively low earnings (and weighted-average in between the two). Conversely, falling input prices entail relatively high profits under LIFO (where cost of goods sold includes the newest inventory) and relatively low earnings under FIFO (with the results reported under

the weighted-average approach being in between). Thus, in periods of significantly changing prices of production inputs, the intercompany differences in inventory cost methods may erode a comparability of reported financial results.

To sum up, intercompany differences in accounting policies may significantly erode a reliability of analytical findings, when reported financial results of two or more businesses are compared. It is important to be aware that such differences occur not only between firms reporting under different accounting standards (e.g. IFRS and U.S. GAAP), but also between entities that apply the same set of regulations. The differences stem from alternatives allowed by accounting regulations, as well as from numerous subjective judgments that must be taken when preparing financial statements. Thus, it is important to be aware of any material differences when comparing results reported by various firms. If possible, it is always reasonable to adjust the reported numbers (on the basis of numerical information disclosed in notes) to arrive at more comparable data. The useful techniques of such adjustments are demonstrated comprehensively in other books (Welc, 2020).

Example 2.6 Description of accounting policies applied to inventories of selected global car manufacturers.

VOLKSWAGEN GROUP

Raw materials, consumables and supplies, merchandise, work-in-progress and self-produced finished goods reported in inventories are carried at the lower of cost or net realizable value. [...] Borrowing costs are not capitalized. The measurement of same or similar inventories is based on the weighted-average cost method.

BMW GROUP

Inventories of raw materials, supplies and goods for resale are stated at the lower of average acquisition cost and net realizable value. Work-in-progress and finished goods are stated at the lower of average manufacturing cost and net realizable value. [...] Financing costs are not included in acquisition or manufacturing cost.

DAIMLER

Inventories are measured at the lower of cost and net realizable value. [...] The cost of inventories is based on the average cost principle and includes expenditures incurred in acquiring the inventories and bringing them to their existing location and condition. In the case of manufactured inventories and work-in-progress, cost also includes production overheads based on normal capacity.

FIAT GROUP

Inventories of raw materials, semi-finished products and finished goods are stated at the lower of cost and net realizable value, cost being determined on a first-in-first-out (FIFO) basis.

FORD MOTOR COMPANY

All inventories are stated at the lower of cost or market. Cost for a substantial portion of U.S. inventories is determined on a last-in, first-out (“LIFO”) basis. LIFO was used for approximately 23 and 25% of inventories at December 31, 2008 and 2007, respectively. Cost of other inventories is determined on a first-in, first-out (“FIFO”) basis.

HONDA MOTOR COMPANY

Inventories are stated at the lower of cost, determined principally by the first-in, first-out method or market.

PSA PEUGEOT-CITROËN

Inventories are stated at the lower of cost and net realizable value, in accordance with IFRS 2—Inventories. Cost is determined by the first-in-first-out (FIFO) method and includes direct and indirect production expenses based on the normal capacity of the production facility.

RENAULT

Inventories are stated at the lower of cost or net realizable value. Cost corresponds to acquisition cost or production cost, which includes direct and indirect production expenses and a share of manufacturing overheads based on a normal level of activity. Inventories are valued under the FIFO (first-in-first-out) method.

TOYOTA MOTOR CORPORATION

Inventories are valued at cost, not in excess of market, cost being determined on the “average-cost” basis, except for the cost of finished products carried by certain subsidiary companies which is determined on the “specific identification” basis or “last-in, first-out” (“LIFO”) basis.

Source Annual reports of individual companies for fiscal year 2008.

2.14 EXERCISE—Review of Selected Notes to Consolidated Financial Statements of Lumentum Holdings**2.14.1 Tasks and Questions**

Based on notes to the consolidated financial statements, included in the annual report of Lumentum Holdings Inc. for fiscal year ended June 30, 2018, conduct a review of the selected accounting issues, by answering the following questions:

- i. Did the company’s auditor give it an unqualified **audit opinion**, as regards its consolidated financial statements for a fiscal year ended June 30, 2018?

- ii. Does the company, in notes to its consolidated financial statements, offer any descriptive information about its **business profile and segments of operations**?
- iii. Does the company, in notes to its consolidated financial statements, disclose any breakdowns of its revenues and earnings into its **product segments**? If yes, then what valuable analytical conclusions may be inferred from those data?
- iv. Does the company, in notes to its consolidated financial statements, disclose any breakdowns of its revenues and earnings into its **geographic segments**? If yes, then what valuable analytical conclusions may be inferred from those data?
- v. Does the company, in notes to its consolidated financial statements, disclose any information about its breakdown of sales by **major individual customers**? If yes, then what valuable analytical conclusions may be inferred from those data?
- vi. The company's reported revenues may potentially be subject to significant subjective judgments (e.g. in relation to warranty provisions or rights of return). Does the company, in notes to its consolidated financial statements, point to any areas of significant **managerial estimates, related to its revenue recognition policy**?
- vii. The company reports significant amounts of inventories. Consequently, its accounting policy applied to inventories may significantly impact the reliability and comparability of its reported financial results. Does the company, in notes to its consolidated financial statements, point to any areas of significant **managerial estimates, related to its inventories**?
- viii. The company reports significant amounts of property, plant and equipment. Consequently, its accounting policy applied to noncurrent operating assets may significantly impact the reliability and comparability of its reported financial results. Does the company, in notes to its consolidated financial statements, explains its accounting policy (including depreciation methods) applied to its **property, plant and equipment**?
- ix. The company reports significant amounts of receivable accounts. Consequently, its accounting policy applied to receivables may significantly impact the reliability and comparability of its reported financial results. Does the company, in notes to its consolidated financial statements, point to any areas of significant **managerial estimates, related to its receivable accounts**?
- x. Since Lumentum Holdings is involved in manufacturing operations, it may be exposed to some risks of future warranty costs (which, in turn, would imply some amounts of warranty provisions on its balance sheet). Does the company, in notes to its consolidated financial statements, point to an existence of any **warranty provisions**, reported on its balance sheet?
- xi. On its balance sheet, Lumentum Holdings reports its inventories in a single line item. Does the company, in notes to its consolidated financial statements, disclose any more detailed **breakdowns of its inventories, into their various**

- classes?** If yes, then what valuable analytical conclusions may be inferred from those data?
- xii. On its balance sheet, Lumentum Holdings reports its receivable accounts at net carrying amounts (i.e. after taking into account its estimated bad debt allowances). Does the company, in notes to its consolidated financial statements, disclose the amounts of its **estimated bad debt allowances?** If yes, then what valuable analytical conclusions may be inferred from those data?
 - xiii. On its balance sheet, Lumentum Holdings reports its property, plant and equipment (PPE) in a single line item. Does the company, in notes to its consolidated financial statements, disclose any more detailed **breakdowns of its PPE, into various classes?** If yes, then what valuable analytical conclusions may be inferred from those data?
 - xiv. In its income statement for fiscal year ended June 30, 2018, the company reported significantly negative “*Provision for (benefit from) income taxes*”, that materially boosted its after-tax earnings (causing net income to be almost twice as high as income before income taxes). Does the company, in notes to its consolidated financial statements, explain any reasons for such **significantly negative income tax expense?**
 - xv. Does the company, in notes to its consolidated financial statements, disclose any noticeable **off-balance sheet liabilities?** If yes, then do their amounts seem significant, as compared to carrying amount of total liabilities, as reported on the company’s balance sheet?

2.14.2 Answers

- i. Yes, Lumentum Holdings received an unqualified audit opinion, since the company’s auditor stated that “*the financial statements present fairly, in all material respects, the financial position of the Company as of June 30, 2018 and July 1, 2017, and the results of its operations and its cash flows for each of the two years in the period ended June 30, 2018, in conformity with accounting principles generally accepted in the United States of America*” (source: page 54 of the annual report of Lumentum Holdings for fiscal year 2018).
- ii. Yes, in Note 19, titled “*Operating Segments and Geographic Information*” (page 100 of the annual report of Lumentum Holdings for fiscal year 2018), the company presents its core business operations as follows:

We are an industry leading provider of optical and photonic products defined by revenue and market share addressing a range of end-market applications including optical communications and commercial lasers. We have two operating segments, Optical Communications, which we refer to as OpComms, and Commercial Lasers, which we refer to as Lasers. Our OpComms products address the following markets: telecommunications [...], data communications [...], and consumer and industrial [...].

Our Lasers products serve our customers in markets and applications such as sheet metal processing, general manufacturing, biotechnology, graphics and imaging, remote sensing, and precision machining such as drilling in printed circuit boards, wafer singulation, glass cutting and solar cell scribing.

- iii. Yes, in Note 19, titled “*Operating Segments and Geographic Information*” (page 101 of the annual report of Lumentum Holdings for fiscal year 2018), the company breaks down its total revenues and gross profit into two product segments. Investigation of those disclosures leads to the following key findings:
 - In fiscal years 2016 through 2018, the share of OpComms segment in total revenues stood stable, within a narrow range between 84.3 and 85.6%. Likewise, in the same three periods the share of Lasers segment in total revenues stood stable as well, within a narrow range between 14.4 and 15.7%.
 - Accordingly, in the analyzed three-year timeframe, the breakdown of the company’s revenues by its two product segments did not show any significant changes.
- iv. Yes, in Note 19, titled “*Operating Segments and Geographic Information*” (page 102 of the annual report of Lumentum Holdings for fiscal year 2018), the company breaks down its total revenues and gross profit into several geographical segments. Investigation of those disclosures leads to the following key findings:
 - In fiscal year 2018, the share of Americas segment in total revenues fell sharply, to 21.5% (from about 33–34% in the preceding two years), while at the same time the share of Asia-Pacific segment continued growing (to 70.3%, from about 54–55% in the preceding two years). The smallest geographic segment, EMEA, continued its declining trend.
 - Accordingly, in the analyzed three-year timeframe (particularly in the most recent fiscal year, 2018), the breakdown of the company’s revenues by three main geographic segments did show significant changes.
- v. Yes, in Note 19, titled “*Operating Segments and Geographic Information*” (page 102 of the annual report of Lumentum Holdings for fiscal year 2018), the company discloses the shares of its four largest individual customers in its total net revenues. Investigation of those disclosures leads to the following key findings:
 - In fiscal year 2018, the company’s single largest customer accounted for as much as 30% of its total revenues. In the same period, its second and third largest customers, combined, generated 22% [= 11% + 11%] of the company’s revenues. This means that the three largest customers, combined, made up more than a half of the company’s sales [= 30% + 11% + 11%].
 - For comparison, in the preceding fiscal year the combined share of three largest customers did not exceed 50% [= 16.7% + 18.5% + 12.4%].
 - Accordingly, in fiscal year 2018, the company increased a scope of its customer concentration (i.e. dependence on few largest customers), which

- may entail a significant business risk (since the loss of any of those three largest customers could deeply erode the company's revenues).
- vi. Yes, the company informs that its reported revenues are subject to at least the following sources of judgmental uncertainty (source: page 65 of the annual report of Lumentum Holdings for fiscal year 2018):

"Our products typically include a warranty and the estimated cost of product warranty claims, based on historical experience, is recorded at the time the sale is recognized".

"We record as a reduction to revenues reserves for sales returns based upon historical experience rates and for any specific known customer amounts. We also provide certain distributors and OEMs with volume-pricing discounts, such as rebates and incentives, which are recorded as a reduction to revenues at the time of sale. Historically these volume discounts have not been significant".

- vii. Yes, the company informs that its reported carrying amounts of inventories are subject to at least the following sources of judgmental uncertainty (source: page 65 of the annual report of Lumentum Holdings for fiscal year 2018):

"We assess the value of our inventory on a quarterly basis and write down those inventories which are obsolete or in excess of our forecasted usage to the lower of their cost or estimated net realizable value. Our estimates of realizable value are based upon our analysis and assumptions including, but not limited to, forecasted sales levels and historical usage by product, expected product lifecycle, product development plans and future demand requirements. Our product line management personnel play a key role in our excess review process by providing updated sales forecasts, managing product transitions and working with manufacturing to minimize excess inventory. [...]"

- viii. Yes, the company informs that its property, plant and equipment are accounted for with the use of the following policies and assumptions (source: page 66 of the annual report of Lumentum Holdings for fiscal year 2018):

"Property, plant and equipment are stated at cost. Depreciation is computed by the straight-line method generally over the following estimated useful lives of the assets: 10 to 50 years for building and improvements, 3 to 5 years for machinery and equipment, and 2 to 5 years for furniture, fixtures, software and office equipment. Leasehold improvements are amortized using the straight-line method over the shorter of the estimated useful lives of the assets or the term of the lease".

- ix. Yes, the company informs that its reported carrying amounts of receivable accounts are subject to at least the following sources of judgmental uncertainty (source: page 68 of the annual report of Lumentum Holdings for fiscal year 2018):

"We maintain an allowance for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. When we become aware that a specific customer is unable to meet their financial obligations, we record a specific allowance to reflect the level of credit risk in the customer's outstanding receivable balance. In addition, we record additional allowances based on certain percentages of aged receivable balances. These percentages take into account a variety of factors

including, but not limited to, current economic trends, payment history and bad debt write-off experience. [...]"

"We have significant trade receivables concentrated in the telecommunications industry. While our allowance for doubtful accounts balance is based on historical loss experience along with anticipated economic trends, unanticipated financial instability in the telecommunications industry could lead to higher than anticipated losses".

- x. Yes, the company informs that it recognizes warranty provisions, whose carrying amounts are subject to at least the following sources of judgmental uncertainty:

"We provide reserves for the estimated costs of product warranties at the time revenue is recognized. We estimate the costs of our warranty obligations based on our historical experience of known product failure rates, use of materials to repair or replace defective products and service delivery costs incurred in correcting product failures. In addition, from time to time, specific warranty accruals may be made if unforeseen technical problems arise" (source: page 70 of the annual report of Lumentum Holdings for fiscal year 2018).

– "We provide reserves for the estimated costs of product warranties at the time revenue is recognized. We typically offer a twelve month warranty for most of our products. However, in some instances depending upon the product, product component or application of our products by the end customer, our warranties can vary and generally range from six months to five years" (source: page 99 of the annual report of Lumentum Holdings for fiscal year 2018).

- xi. Yes, in Note 7, titled "*Balance Sheet Details*" (page 75 of the annual report of Lumentum Holdings for fiscal year 2018), the company breaks down total carrying amounts of its inventories into three classes. Investigation of those disclosures leads to the following findings:

- Between July 1, 2017 and June 30, 2018, the carrying amount of the company's finished goods rose from 71.7 USD million to 98.2 USD million (i.e. by almost 37% y/y).
- Between July 1, 2017 and June 30, 2018, the carrying amount of the company's work in process fell from 49.4 USD million to 34.5 USD million (i.e. by over 30% y/y).
- Between July 1, 2017 and June 30, 2018, the carrying amount of the company's raw materials and purchased parts fell from 24.1 USD million to 20.9 USD million (i.e. by over 13% y/y).
- Accordingly, an increase of the company's total inventories from 145.2 USD million to 153.6 USD million (i.e. by 5.8% y/y) was entirely attributable to the stockpiling finished goods (that rose by almost 37% y/y). This suggests that at the end of its fiscal year ended June 30, 2018, the company might hold large amounts of excess inventories, which increased a risk of significant future inventory impairment write-downs (or eroding gross margins, if the excess inventories are disposed of at deeply discounted prices).

- xii. Yes, in Note 7, titled "*Balance Sheet Details*" (page 75 of the annual report of Lumentum Holdings for fiscal year 2018), the company explains that:

“As of June 30, 2018 and July 1, 2017, our accounts receivable allowance balance was \$ 2,6 million and \$ 1,8 million, respectively”.

- This means that the amount of allowance for doubtful accounts rose by over 44% y/y (i.e. from 1.8 USD million to 2.6 USD million), while at the same time the carrying amount of the company’s receivables (as disclosed on its balance sheet) grew by 18.5% y/y (i.e. from 166.3 USD million to 197.1 USD million). Accordingly, the company’s allowances for uncollectible accounts seem not to lag behind its total receivables.
- xiii. Yes, in Note 7, titled “*Balance Sheet Details*” (page 75 of the annual report of Lumentum Holdings for fiscal year 2018), the company breaks down total gross (i.e. pre-depreciation) amounts of its property, plant and equipment into seven classes. Their investigation leads to the following findings:
- The dominating item of total property, plant and equipment is “*Machinery and equipment*”, with a share of almost 73% [= 463.6 USD million/636.2 USD million], as on June 30, 2018.
 - Total accumulated depreciation constituted 51.8% of total gross amount [= 329.3 USD million/636.2 USD million] on June 30, 2018, and 52.1% [= 297.7 USD million/571.2 USD million] on July 1, 2017.
 - Accordingly, an average age of the company’s property, plant and equipment did not change significantly, between July 1, 2017 and June 30, 2018.
- xiv Yes, in Note 15, titled “*Income taxes*” (on page 89 of the annual report of Lumentum Holdings for fiscal year 2018), the company explained that:
- “During fiscal year 2018, our provision for income taxes decreased primarily as a result of \$ 207.2 million of income tax benefit related to the release of valuation allowance against our U.S. federal and certain state deferred tax assets, partially offset by \$ 80.5 million of income tax expense related to the remeasurement of our net deferred tax assets as a result of reduction in the U.S. federal corporate tax rate”.*
- xv. Yes, in Note 18, titled “*Commitments and Contingencies*” (on page 97 of the annual report of Lumentum Holdings for fiscal year 2018), the company discloses “*future minimum annual lease payments under non-cancellable operating leases*”, totaling 30.8 USD million in 2019 onwards. When compared to the amount of the company’s total liabilities, as disclosed on its balance sheet (i.e. 619.6 USD million, as on June 30, 2018), the sum of total future minimum lease payments seems not to be significant.

Reference



Financial Statement Analysis

3

3.1 Accounting Ratios as a Primary Tool of a Financial Statement Analysis

A primary approach to evaluating and comparing financial performance of enterprises is a **ratio analysis**, which deals with a set of metrics that are typically computed on the basis of inputs extracted from primary financial statements (discussed in Chapter 1) and notes to them (discussed in Chapter 2). As will be demonstrated in the following sections, most of those accounting ratios are calculated in a very simple way, as a quotient of just two numbers. Each of the most commonly applied financial statement ratios falls into one of the following categories:

- **Profitability ratios**, whose goal is to measure a return generated by a business from its revenues, assets and shareholders' equity.
- **Financial risk ratios**, whose primary goal is to quantify a given company's exposure to risks of insolvency and illiquidity (i.e. risk of a financial failure).
- **Turnover ratios**, that supplement the profitability and financial risk ratios in measuring business efficiency and risks.
- **Valuation ratios**, also known as **valuation multiples**, which are useful in estimating a fair value of any business (as well as fair values of individual business units of a single company).
- **Cash flow-based ratios**, that are applied in an examination of corporate performance and financial risks, on the ground of data reported in a cash flow statement.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-030-97582-1_3.

Individual ratios may be assessed with the following approaches:

- **Time-series approach**, focused on trends of individual ratios of a given business, i.e. their changes from period to period.
- **Comparative (relative) approach**, where values of a given firm's ratios are compared to their values computed for other businesses (e.g. competitors) or to industry-wide averages.
- **Normative approach**, where financial statement ratios of a given business are compared to some pre-assumed norms, e.g. safety thresholds or critical values.

All three approaches to examining accounting ratios will be illustrated in the following sections of this chapter. Another analytical technique, particularly useful in a credit risk analysis (e.g. corporate bankruptcy prediction), is based on multi-criteria econometric models, in which several accounting ratios are examined simultaneously. This tool of a financial statement analysis will be demonstrated in Sect. 3.7. Then, some industry-specific issues (that affect observed values of accounting ratios), as well as fundamental interrelationships between selected individual ratios, will be discussed. However, all techniques of the financial statement analysis are exposed to some pitfalls, related to accounting data reliability and comparability. Accordingly, the chapter closes with a concise discussion of the most relevant weaknesses and hazards of business performance evaluation, based on corporate financial statements.

It must be emphasized that the accounting ratios are applied not only in a purely financial analysis (e.g. in equity valuation or credit risk assessment), but also in a corporate strategy analysis, planning and management (David, 2011; Wheelen & Hunger, 1995; White, 2004).

In the following sections of this chapter, an application of financial statement ratios (as well as some other analytical tools) will be illustrated with an extensive use of real-life accounting numbers, published by multiple global corporations. It must be emphasized, however, that none of the techniques of analytical adjustments, discussed in some other books (Welc, 2020), have been applied to the corporate accounting numbers used as inputs in this chapter.

3.2 Profitability Ratios

3.2.1 Nature and Types of Profitability Ratios

Profitability ratios serve to measure rates of return that a given business generated from its revenues, assets and shareholders' equity. Accordingly, the following three classes of profitability ratios are typically computed, interpreted and compared:

- **Profitability of sales**, that measures a percentage rate of return, on various levels of an income statement, that is earned from a given entity's sales revenues (accordingly, these ratios are based on the income statement data only).

- **Profitability of assets**, that measures rate of return that is generated by a given business' total assets (accordingly, these ratios are based on the income statement as well as balance sheet).
- **Profitability of net assets (equity)**, that measures rate of return generated for a given entity's shareholders (accordingly, these ratios are based on the income statement as well as balance sheet).

Profitability ratios are typically scrutinized with a time-series approach and a comparative approach. Accordingly, in the following sub-sections an exemplary profitability analysis will be demonstrated on the ground of the Volkswagen Group's ratios, computed for fiscal year 2008, and compared to both their past values (for 2007) as well as their respective industry-wide averages (i.e. medians within a sample of selected global car manufacturers).

3.2.2 Profitability of Sales

Multiple versions of profitability of sales ratios are discussed in a finance literature. Likewise, individual analysts often create and use their own modifications, tailored to specific features of businesses that they investigate. However, the following ratios seem to form a standard set of metrics applied in a profitability of sales analysis:

- **Gross margin on sales**, that divides gross profit on sales (i.e. net sales revenues less cost of goods sold) by net sales revenues.
- **Net margin on sales**, that divides profit on sales (i.e. net sales revenues less cost of goods sold less general, administrative and selling expenses, including R&D costs) by net sales revenues.
- **Operating profitability**, that divides operating profit, often abbreviated to EBIT (earnings before interest and taxes), i.e. profit on sales plus other operating income less other operating expenses, by net sales revenues.
- **EBITDA margin**, that divides EBITDA (earnings before interest, taxes, depreciation and amortization, i.e. operating profit plus depreciation and amortization), by net sales revenues.
- **Gross (pre-tax) profitability**, that divides pre-tax earnings by net sales revenues.
- **Net (after-tax) profitability**, that divides net earnings by net sales revenues.

All those ratios are complementary to each other, since they focus on different levels of a given entity's income statement. Accordingly, they should be computed and interpreted in combination, rather than in isolation from each other. **Gross margin on sales** measures an average margin obtained on sales of goods and services, because gross profit on sales takes into account only expenses related to goods and services sold in a period (omitting general, administrative, selling and R&D expenses, as well as an impact of other operating items and financial items).

Net margin on sales, in turn, gauges an average profitability generated by a given entity on its most fundamental (core) business operations, which are expected to be recurring and sustainable. It omits indirect operating items, included in other operating income and other operating expenses (that often have a one-off, non-cash or non-recurring nature), as well as items which have nothing to do with the core business (such as financial income and financial costs). **Operating profitability** reflects average margins earned on a firm's direct and indirect operating activities, i.e. after taking into account other operating income and other operating expenses, but before taking into account any non-operating factors (such as financial income, financial costs and income taxes). EBITDA is often used (incorrectly) as a simplified and surrogate proxy for operating cash flows, since it omits major non-cash expenses (i.e. depreciation and amortization). Consequently, **EBITDA margin** is typically used (and abused) as a rough indicator of a cash-generating capacity. **Gross (pre-tax) profitability** reflects a return generated by a business, after all its revenues, gains, expenses and losses, except for income taxes, are taken into account. As such, it is useful in comparative analyses of businesses that operate in different tax jurisdictions and which are subject to different tax rates. Finally, **net (after-tax) profitability** gauges corporate profitability after taking into account all inflows and outflows of economic benefits, i.e. all revenues, expenses, gains, losses and income taxes.

Normally, for a healthy and well-managed firm, the following cascading relationships are expected to be observed in the long run (although they may be distorted temporarily, due to, e.g. cyclical variations of demand, a sudden increase of cash held immediately after an issuance of new shares, deep restructuring that involves disposals of noncurrent assets or significant reversals of previously recognized provisions):

- **Net margin on sales > Operating profitability**—this is because other operating expenses are generally expected to exceed other operating income. A main reason is a principle of an accounting prudence, that calls for a recognition of other operating expenses, such as bad debts or inventory impairment write-downs, as soon as they become probable (i.e. more likely than not). In contrast, items of other operating income should be recognized only when their inflow is virtually certain. Consequently, if in a given period the operating profitability exceeds the net margin on sales significantly, then the bottom-line (net earnings) is likely to be temporarily and unsustainably boosted by non-recurring and lower-quality items, that are either only indirectly related to core business operations or are based on highly subjective estimates (or both). In such a case, the operating profitability reported in a given period should be deemed unsustainable (that is, it is likely to fall in the following periods).
- **Operating profitability > Gross (pre-tax) profitability**—this is because financing expenses are expected to exceed financial income (in the long run), in case of non-financial businesses. Consequently, if in a given period the pre-tax profitability exceeds the operating profitability significantly, then the bottom-line

(net earnings) is likely to be boosted by items unrelated to core business operations, that are either non-recurring and unsustainable (e.g. one-off currency gains) or stem from surplus balances of financial assets (which may be legitimate temporarily, e.g. immediately after an issuance of new equity shares, but may also reflect a poor financial management, resulting in over-liquidity).

- **Gross (pre-tax) profitability > Net (after-tax) profitability**—this is because income taxes are expected to contribute negatively to a bottom line. A reason is that in majority of tax jurisdictions, a positive taxable income is subject to income tax burden, while tax losses are accompanied by zero (but not negative) income tax. In other words, firms have to pay income taxes when they earn money, while it is rare that they receive any income tax refunds (i.e. transfers of real cash back from tax authorities to the company) in periods when they incur tax losses (and even if it happens, it is temporary only). Consequently, any negative income tax reported (that raises after-tax earnings above pre-tax earnings) is in huge majority of cases attributable to negative deferred income taxes, i.e. increases in deferred tax assets. Those deferred tax assets, in turn, typically reflect either tax-loss carryforward (i.e. expected future tax shields resulting from a possibility of deducting past tax losses from future taxable income) or some other expected tax benefits, such as income tax exemptions obtained as a result of launching operations in some special economic zones. In any circumstances, such deferred tax benefits, recognized in income statement, tend to be transitory (and typically of a non-cash nature on their recognition date). Consequently, if in any period the firm's after-tax profitability exceeds its pre-tax profitability, then its bottom-line (net earnings) is likely to be unsustainably boosted by items that correspond to deferred income taxes.

To sum up, the upper in an income statement a corporate profit is generated, the better. In contrast, the larger are positive contributions of non-operating factors (particularly if they have a one-off nature or are based on subjective judgments), to after-tax earnings, the poorer is the quality and sustainability of the latter.

In any discussion about profitability ratios EBITDA margin deserves a special attention. As was explained, EBITDA is typically calculated as a sum of operating profit and depreciation and amortization expense (including impairments of noncurrent assets). It is often treated as a surrogate of operating cash flows, since it adjusts the operating profit for expenses of a non-cash nature (Mulford & Comiskey, 2002). Advocates of EBITDA tend to emphasize its comparability, as compared to other profit measures (DePamphilis, 2010). They argue that depreciation and amortization charges are prone to subjective judgments. Accordingly, firms may inflate their reported earnings by aggressively extending their assets' useful lives (Demerjian, 2009; Epstein, 2009). Opponents of EBITDA, in contrast, argue that the depreciation and amortization constitute real expenses that should not be ignored (Palepu et al., 2004). Also, Rozenbaum (2014) found that managers' reliance on EBITDA leads them to overinvest. Accordingly, the critics of EBITDA often emphasize that it may be particularly misleading in case of capital-intensive firms, where depreciable assets constitute primary value drivers.

A finance literature discusses also potential flaws of EBITDA as a rough proxy for cash flows. Its tendency to overstate estimated cash flows is cited as the most serious pitfall (Mulford & Comiskey, 2005). This is due to an omission of changes in working capital, which may drain corporate cash seriously, while not being taken into account in the EBITDA calculation (Fridson & Alvarez, 2002; Hackel, 2011).

However, despite all its pros and cons, EBITDA is used much more frequently, as compared to cash flows, as a performance measure in debt covenants (Demiroglu & James, 2010; Li, 2016). EBITDA is also extensively used in a business valuation (Verninmen et al., 2005), particularly of small private enterprises that do not prepare cash flow statements (Greenwald et al., 2001). A popularity of this metric is corroborated by an academic research, according to which EBITDA-based multiple (that will be discussed later in this chapter) is one of the two most frequently used valuation indicators by European stock analysts (Bancel & Mittoo, 2014; Fernandez, 2002; Lie & Lie, 2002). All this makes EBITDA one of the most frequently used (and often abused) metrics in corporate finance, both in an equity valuation as well as in a credit risk analysis. However, EBITDA should never be applied and interpreted blindly. Particularly, it should not be investigated in an isolation from other income statement numbers (but, instead, in combination with them).

Now let's compute the profitability of sales ratios of Volkswagen Group, for fiscal years 2007 and 2008. Their values are presented in Table 3.1. Please note that on the face of its income statement the company did not report its profit on sales, as a separately disclosed item (which many other firms do). Therefore, in order to calculate net margin on sales, the profit on sales must be computed first, as a difference between gross profit on sales and distribution and administrative expenses. Likewise, depreciation and amortization expense is not disclosed in the VW's income statement. It must be therefore extracted from the company's cash flow statement. However, such an extraction must be careful so that all relevant depreciation and amortization charges are taken into account. In the VW's case, there are as many as three line items of operating cash flows that refer to those non-cash cost components. They include (1) depreciation and amortization expense, (2) amortization of capitalized development costs and (3) depreciation of leasing and rental assets and investment property. Consequently, in order to obtain a correct numerator to the EBITDA margin ratio, all those three items, related to the VW's depreciation and amortization expense, must be summed. It is worth noting that many other firms (for example Daimler Group) report their whole depreciation and amortization expense under a single line item of their cash flow statements. Consequently, a due attention should be paid to a layout of a given company's reported cash flow statement (in order not to overlook any numbers related to depreciation and amortization), when its EBITDA is compared to other firms' EBITDAs.

The following conclusions may be inferred from Table 3.1 (in combination with some other available information):

Table 3.1 Profitability of sales ratios of Volkswagen Group in fiscal years 2007 and 2008

Ratio	Formula applied (items labeled as in VW's annual report for 2008)	2007	2008
Gross margin on sales	Gross profit/ Sales revenue	15.0% $= 16,294/108,897$	15.1% $= 17,196/113,808$
Net margin on sales	(Gross profit – Distribution expenses – Administrative expenses)/ Sales revenue	4.2% $= (16,294 - 9,274 -$ $2,453)/108,897$	3.4% $= (17,196 - 10,552 -$ $2,742)/113,808$
Operating profitability	Operating profit/ Sales revenue	5.6% $= 6,151/108,897$	5.6% $= 6,333/113,808$
EBITDA margin	(Operating profit + Depreciation and amortization ^a)/ Sales revenue	14.0% $= (6,151 + 5,435 +$ $1,843 + 1,780)/108,897$	13.0% $= (6,333 + 5,191 +$ $1,392 + 1,823)/113,808$
Gross (pre-tax) profitability	Profit before tax/ Sales revenue	6.0% $= 6,543/108,897$	5.8% $= 6,608/113,808$
Net (after-tax) profitability	Profit after tax/ Sales revenue	3.8% $= 4,122/108,897$	4.1% $= 4,688/113,808$

^aData on depreciation and amortization were extracted from the VW's consolidated cash flow statement: Depreciation and amortization expense (5,191 and 5,435 in 2008 and 2007, respectively), Amortization of capitalized development costs (1,392 and 1,843 in 2008 and 2007, respectively), Depreciation of leasing and rental assets and investment property (1,823 and 1,780 in 2008 and 2007, respectively)

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

- In both periods all six investigated ratios had positive values, which seem to point to a good business performance (subject to some qualifications discussed below), particularly in light of the global economic crisis that surprised many businesses in the second half of 2008.
- The VW's gross margin on sales stood stable (with its slight increase), which suggests that the company was able to keep its average selling prices intact (despite probably fierce competitive pressures at the end of 2008) and to keep its manufacturing costs under control.
- In spite of that slight improvement in gross margin on sales, net margin on sales fell by 0.8 percentage points (from 4.2 to 3.4%), which suggests that in order to keep its gross margin on sales stable, under deteriorating business conditions observed in late 2008, the company had to intensify its distribution and promotion activities. This seems confirmed by an increase in an amount of its distribution expenses, that grew in 2008 by 13.8% y/y (from 9,274 RUR million to 10,552 EUR million), much faster than net sales (which rose by 4.5% y/y). However, the VW's administrative expenses grew relatively fast too, from 2,453 EUR million to 2,742 EUR million (i.e. by 11.8%). This means that a deterioration of the VW's net margin on sales, in fiscal year 2008, was driven by

its non-manufacturing operating expenses (i.e. administrative and distribution costs).

- Operating profitability, similarly as gross margin on sales, stood stable at 5.6% level. It is noticeable, however, that in both 2007 and 2008 the operating profitability exceeded net margin on sales significantly (by 1.4 and 2.2 percentage points, respectively). As was already noted in Chapter 2, in both years the VW's total other operating income surpassed its total other operating expenses, positively contributing to the reported operating profit. An investigation of Note 5 (Table 2.2 in Chapter 2) and Note 6 (Table 2.3 in Chapter 2) to the company's financial statements found that in both years, the non-cash items (such as valuation allowances, provisions and their reversals), as well as gains and losses related to foreign currencies, contributed materially to the VW's reported operating profit. In light of a non-recurring nature of majority of those factors, it was likely that the reported operating profitability, of 5.6%, was unsustainable (that, in turn, would suggest a high probability of its deterioration in the near future).
- EBITDA margin stood quite stable (with a slight decrease), at a double-digit level. It is worth noting that a value of this ratio exceeded the operating profitability by about 7.5–8.5 percentage points, which is consistent with a capital-intensive nature of the car industry (where business operations entail significant investments in tangible and intangible noncurrent assets).
- Gross profitability stood quite stable (with a slight decrease) and exceeded the operating profitability in both years. This is consistent with a positive amount of financial result (i.e. an excess of financial income over financial costs), as disclosed on the face of the VW's income statement for both years. Even though a monetary amount of that positive contribution does not seem substantial, it constitutes an another (after a positive contribution of other operating income and other operating expenses) factor, that is not related to the company's core business operations, but which boosted its bottom-line (net earnings).
- Finally, the VW's net (after-tax) profitability was positive in both years and showed a discernible increase in fiscal year 2008 (since it grew from 3.8 to 4.1%). It is worth noting, however, that the company's after-tax profitability rose despite the deteriorating pre-tax profitability. This means that the VW's effective income tax rate (i.e. a quotient of total income tax expense and profit before tax) must have fallen. Indeed, the company's effective tax rate fell from 37.0% in fiscal year 2007 to 29.1% in the following period (down by almost eight percentage points). Even though it might be a result of fully legitimate activities (e.g. an efficient tax optimization or a rising share of markets with relatively low income tax rates, within a geographical breakdown of the company's total pre-tax income), it was an improvement of the net margin which was attributable to factors that tend to be unsustainable and typically have no any direct relationship with a firm's core business efficiency. Also, a sharply falling effective income tax rate (particularly when a growth of pre-tax earnings is accompanied by a shrinking current income tax) may also signal an aggressive accounting practices (aimed at artificially boosting the reported corporate profits), as demonstrated in other texts (Welc, 2020).

Table 3.2 compares the ratios of sales profitability of Volkswagen Group, in fiscal year 2008, with their industry-wide medians, within a sample of selected nine “peers” (other global car manufacturers). As may be seen, the VW’s gross and net margins on sales, that gauge the company’s core business profitability, lagged behind their respective industry-wide averages. In contrast, in terms of all other three ratios of profitability, Volkswagen Group beats its competitors. In other words, in 2008 the company achieved the above-average profitability on the operating, EBITDA and net earnings level, despite delivering sub-par margins on the core business level. It seems to corroborate the suspicions raised earlier, about a transitory (unsustainable) nature of the VW’s operating and net profits, reported for fiscal year 2008. It is worth noting that the industry-wide averages were featured by the cascading relationships, suggested before for a “healthy” firm (i.e. median net margin on sales exceeded median operating profitability, which in turn was higher than median after-tax profitability).

To conclude, in fiscal year 2008 Volkswagen Group managed to maintain its gross margin on sales and improved its net profitability. However, a structure of the company’s income statement called for some dose of skepticism, as regards a sustainability of those reported results. First of all, unlike within a group of its “peers”, in both years under investigation the VW’s operating profitability exceeded its net margin on sales significantly, due to multiple factors of a one-off nature. Second, in

Table 3.2 Profitability of sales ratios of selected car manufacturers in fiscal year 2008

Company	Gross margin on sales (%)	Net margin on sales (%)	Operating profitability ^a (%)	EBITDA margin ^a (%)	Net (after-tax) profitability (%)
BMW	16.7	1.3	1.7	21.4	0.6
Daimler	22.5	5.4	6.2	12.1	1.5
Fiat Group	16.8	5.7	5.7	10.5	2.9
Ford Motor Company	13.1	-1.5	-2.8	11.0	-10.0
General Motors	-0.2	-9.8	-14.3	-3.9	-20.8
Honda Motor	28.8	7.9	7.2	11.5	5.0
PSA Peugeot Citroen	17.4	1.0	-0.7	6.1	-0.9
Renault	21.5	4.0	-0.3	7.5	1.6
Toyota Motor	22.2	12.7	8.6	14.3	6.5
Medians for the VW’s “peers”	17.4	4.0	1.7	11.0	1.5
Volkswagen Group	15.1	3.4	5.6	13.0	4.1

^aIn order to ensure comparability, operating profit has been computed for each “peer” as: profit on sales + other operating income – other operating expenses; therefore, in some cases the obtained numbers, which were used as proxies for operating profits, may differ from items reported as operating profits on individual firms’ income statements

Source Annual reports of individual companies for fiscal year 2008 and authorial computations

both periods the company's financial result (that has no direct relationship with its core business operations) contributed positively as well, which was manifested in the gross (pre-tax) profitability exceeding the operating profitability. Last but not least, an observed improvement in net (after-tax) profitability was to a large extent driven by a sharp contraction of the VW's effective income tax rate. All this suggested that the company's sustainable (recurring) profitability, in fiscal years 2007 and 2008, was substantially lower than reported (which, in turn, implied a high probability of a contraction of profits in the foreseeable future).

3.2.3 Profitability of Assets (ROA) and Shareholders' Equity (ROE)

Profitability of sales ratios, discussed in the preceding sub-section, were based on the income statement numbers only. Even though a computation of EBITDA margin required extracting depreciation and amortization expense from a cash flow statement, those inputs still corresponded to corporate operating expenses, that constitute a part of any firm's income (even when they are not reported on the face of its income statement, as in Volkswagen Group's case). In contrast, the other two commonly applied profitability ratios relate an entity's profit (from its income statement) to its total assets or its net assets (from its balance sheet). These ratios are computed as follows:

- **Return on assets (ROA)** divides net (after-tax) earnings by total assets.
- **Return on equity (ROE)** divides net (after-tax) earnings by total shareholders' equity.

The former gauges a percentage rate of return that a business generated in a given period from all its assets, i.e. from an entire capital poured into it by its owners (shareholders) as well as its creditors. The latter, in contrast, measures the percentage rate of return earned by a business for its owners.

A rising **return on assets (ROA)** typically reflects an increased efficiency, meant as an amount of money generated from a one monetary unit of funds, tied up in a given firm's assets. In contrast, sharply or gradually falling return on assets may reflect, among others, eroding operating margins or lowering capacity utilization rates (e.g. resulting from a past overinvestment) or excess short-term assets (e.g. stockpiling inventories). Shrinking return on assets may also constitute a symptom of poor accounting quality (when a company overstates its reported earnings via inflated asset values).

Return on equity (ROE) constitutes one of the most fundamental measures of an investment return, earned by a business for its owners (shareholders). It is compared to cost of equity capital, that constitutes a sum of a risk-free rate (i.e. an interest that may be earned on safe investments, such as treasury bonds) and an estimated entity-specific equity risk premium (which is positively correlated with corporate business risks). Accordingly, in the medium and long run, any business

venture should generate the ROE that is higher (by a sufficient margin) than the risk-free rate, in order to compensate for a higher risk of investing in equity interests, as compared to investing in government bonds or keeping money on bank deposits. When any company's return on equity is positive, but low (i.e. below the firm's cost of equity capital), than the shareholders' funds, invested into it, are actually burned (despite the firm's positive net earnings), since a low ROE does not compensate for the equity risk. However, it is worth noting that the return on equity may be increased by either improvements in a real operating efficiency (e.g. higher margins on sales, that translate into higher net earnings) or by an overly aggressive financing strategy, meant as an over-reliance on debt (instead of equity) within a given company's capital structure. The latter approach, even if boosting the return on equity, may also entail an excessive exposure to an insolvency risk. Consequently, the return on equity ratios should never be interpreted mechanically (i.e. in isolation from other metrics, such as an indebtedness ratio discussed in the following section), particularly in comparative analyses of various businesses. The relationships between ROE and its key fundamental drivers (so-called DuPont analysis) will be discussed in Sect. 3.9 of this chapter.

Both ratios (i.e. ROA as well as ROE) include in their denominators the balance sheet-based inputs. Therefore, for annual data, there are several alternative approaches to their computation:

- Dividing net earnings, earned in a given year, by total assets or shareholders' equity as at the end of the same year.
- Dividing net earnings, earned in a given year, by an average value of total assets or shareholders' equity across the period, where the average is computed as an arithmetic mean from two values (as at the beginning as well as at the end of the year).
- Dividing net earnings, earned in a given year, by an average value of total assets or shareholders' equity across the year, where the average is computed as an arithmetic mean from four values (as at the end of each quarter of the year).

The first approach is the simplest and the least data-hungry one. However, it is prone to some possible distortions, particularly when a business under investigation increased its assets or equity significantly near a period-end (e.g. as a result of a shares issuance). In contrast, the third approach is probably the most reliable one. However, it calls for data from corporate quarterly financial reports. Since the annual reports are investigated in this chapter, the second approach (that seems more immune to distortions than the first one and less data-hungry than the third one) will be followed in this section.

Table 3.3 presents the values of the ROA and ROE ratios of Volkswagen Group, computed for fiscal years 2007 and 2008.

The following conclusions may be inferred from Table 3.3:

- Both investigated ratios stood rather stable in both analyzed periods, with a slight improvement in ROA and a minor deterioration of ROE.

Table 3.3 Return on assets (ROA) and return on equity (ROE) of Volkswagen Group in fiscal years 2007 and 2008

Ratio	Formula applied (items labeled as in the VW's annual report for 2008)	2007	2008
Return on assets	Profit after tax/Average total assets ^a	2.9% $= 4,122/[(145,357 + 136,603)/2]$	3.0% $= 4,688/[(167,919 + 145,357)/2]$
Return on equity	Profit after tax/ Average shareholders' equity ^b	14.0% $= 4,122/[(31,938 + 26,959)/2]$	13.5% $= 4,688/[(37,388 + 31,938)/2]$

^a = (Total assets at the beginning of the year + Total assets at the end of the year)/2

^b = (Total equity at the beginning of the year + Total equity at the end of the year)/2

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

- A double-digit return on equity seemed high enough to deliver a steady and rather satisfactory return to shareholders. In 2007 and 2008 the German government bonds, that may be used as a proxy for a risk-free investment, offered interest rates of about 2.5–4.5% (depending on a timing of an investment and maturity of a given bond). Thus, Volkswagen Group, with its ROE of 13.5–14.0%, was able to offer an equity-risk premium of approximately 9–11%, which seems more than necessary to compensate for an increased risk associated with investing in the company's shares (as an alternative to the German government bonds).
- However, the very same qualifications, about a reliability and sustainability of the VW's net earnings reported for fiscal year 2008, that were raised in the preceding sub-section, are applicable here (i.e. the same factors, which might have boosted the VW's consolidated net earnings, could have boosted its ROE as well). If those qualifications are legitimate, then the company's sustainable ROE could have been significantly lower than the values calculated above.
- Even in an absence of any legitimate doubts about the reliability and sustainability of a given firm's reported earnings, there may still exist some issues related to its capital structure. As mentioned before, as long as a given business generates positive operating profits, its return on equity may be boosted by an over-reliance on debt, with a resulting high risk of its future insolvency. Thus, a diligent assessment of a corporate return on equity should not be done in isolation from the indebtedness ratios (discussed in the following section) and should not ignore the fundamental relationships between the ROE and its three fundamental drivers (that will be discussed in Sect. 3.9 of this chapter).

Table 3.4 compares the return on assets (ROA), as well as the return on equity (ROE), earned by selected global car manufacturers in 2008.

Table 3.4 ROA and ROE of selected car manufacturers in fiscal year 2008

Company	Return on assets (ROA) (%)	Return on equity (ROE) (%)
BMW	0.3	1.6
Daimler	1.1	4.0
Fiat Group	2.8	15.4
Ford Motor Company	-5.9	N/A ^a
General Motors	-25.9	N/A ^a
Honda Motor	4.9	13.3
PSA Peugeot Citroen	-0.8	-3.6
Renault	0.9	2.9
Toyota Motor	5.3	14.5
Medians for the VW's "peers"	0.9	4.0
Volkswagen Group	3.0	13.5

^aBoth Ford Motor Company as well as General Motors had negative carrying amounts of consolidated shareholders' equity at the end of 2008, which made their ROE for that period non-interpretable (therefore, those two observations were omitted in a computation of median ROE)

Source Annual reports of individual companies for fiscal year 2008 and authorial computations

As may be seen, in 2008 Volkswagen Group clearly outperformed most of its rivals, in terms of both its ROA as well as its ROE. The values of both ratios, computed for the company, were several times higher than their respective industry-wide averages. However, two relevant caveats are applicable here. First, our earlier qualifications (raised in the preceding sub-section), regarding a transitory nature of the VW's net earnings reported for fiscal year 2008, are valid here as well (since the same factors that boosted the company's net earnings, inflated also its ROA and ROE). Second, an evaluation of the return on equity of any company, particularly as compared to its "peers", should not be conducted in an isolation from relevant interplays between the ROE's three fundamental drivers (i.e. sales profitability, asset turnover and financial leverage). This area of a financial statement analysis, i.e. an investigation of corporate ROE's breakdown, will be covered with detail in Sect. 3.9 of this chapter.

3.3 Financial Risk Ratios

3.3.1 Nature and Types of Financial Risk Ratios

Generally speaking, profitability ratios discussed in the previous section serve to measure rates of return generated by a business. Even though they do convey some information about corporate business risks (since firms with a below-average

profitability tend to be more vulnerable to changes in an economic environment, and thus relatively riskier than their more profitable “peers”), their primary goal is to paint a picture of a given company’s performance, i.e. how successful it is in generating economic benefits (meant as profits). However, as will be demonstrated later in the chapter, the profitability of any enterprise (particularly its return on equity) may be boosted by either its real operating achievements or by its bold financing decisions (or a combination of both). Therefore, an assessment of any firm’s economic performance should not be narrowed to its profitability only, i.e. it should not be conducted in isolation from selected financial risk metrics. Instead, corporate financial analysis should combine ratios of profitability and ratios of financial risk.

Financial risk ratios serve to measure an entity’s exposure to a risk of its financial failure (default), meant as a loss of liquidity or solvency. Generally speaking, the following three broad classes of financial risk ratios are typically computed, interpreted and compared:

- **Indebtedness ratios** (also labeled as **financial leverage** or **financial gearing ratios**), that quantify an extent to which corporate assets and operations are funded from external (non-equity) sources of capital, such as financial debts (bank loans, corporate bonds, etc.) as well as operating liabilities (e.g. trade payables), that sooner or later will have to be settled. Indebtedness may also be interpreted as a measure of debts to be repaid, relative to total assets available as a potential source of funds for its repayment (Beaver et al., 2005).
- **Liquidity ratios**, that focus on a short-term financial liquidity and gauge an extent to which corporate current liabilities (i.e. debts maturing in less than one year from a balance sheet date) could be settled from a given company’s current (liquid) assets, such as cash, short-term financial assets, inventories and receivable accounts (Pratt & Niculita, 2008),
- **Debt-coverage ratios** (also labeled as **liabilities-coverage ratios**), which measure an extent to which a given firm’s liabilities could be settled from profits and cash flows that it generates.

Similarly as in a case of profitability, the indebtedness, liquidity and debt-coverage ratios are complementary to each other, since they focus on different aspects of corporate financial risks. Also, they may differ in terms of their relative usefulness in various circumstances. For example, liquidity is more informative of a credit risk for firms with high levels of short-term assets and liabilities (e.g. in inventory-intensive industries), since the operations and cash flows of those firms tend to be driven by short-term accounts (Demerjian, 2007). In contrast, total indebtedness may be more relevant in capital-intensive industries, where noncurrent (long-term) assets play a major role. Consequently, the individual financial risk metrics should be computed and interpreted in combination, rather than in isolation from each other.

Indebtedness, as its name suggests, focuses on a general scope of corporate debts owed to other parties, without taking into account a time structure

(maturities) of those obligations. Accordingly, **indebtedness ratios** serve as crude measures of a general solvency, with an assumption that a risk of insolvency is positively correlated with a share of non-equity sources of funds in corporate capital structure (i.e. the higher the indebtedness, the higher the risk of insolvency). Liquidity, in contrast, focuses on a firm's capability of settling its short-term obligations (payable in less than twelve months), without taking into account its debts that have maturities longer than one year. Accordingly, **liquidity ratios** are biased toward a short-term sustainability of an enterprise. Their common feature is a simplifying assumption that an entity's short-term obligations will be repaid from its current assets (i.e. its cash holdings combined with non-cash assets that may be expected to be converted into cash within less than twelve months), with an auxiliary assumption that a risk of a financial default is negatively correlated with an amount of current assets held. In other words, it is assumed that the more current assets a given business holds, relative to its short-term liabilities, the lower is its insolvency risk. Accordingly, the liquidity ratios do not take into consideration profits and cash flows that a business may generate and use to settle its obligations. **Debt-coverage ratios**, in contrast to liquidity ratios, are based on an assumption that a firm's debts (total or short-term ones, depending on a given ratio) will be repaid from its generated cash flows, rather than from its assets. As such, the debt-coverage ratios typically do not take into account any liquid assets that a given company holds and may use to settle its financial commitments.

An enterprise with a low indebtedness (i.e. with a relatively low share of liabilities in its capital structure) may lose its liquidity suddenly, when majority of its debts have short-term maturities, while at the same time its assets are rather illiquid (i.e. included mostly fixed ones) and its ability to generate operating cash flows worsens unexpectedly (e.g. due to an economic slowdown). To the contrary, a heavily indebted company may stay solvent, if it holds enough liquid assets (relative to its liabilities) and/or generates a smooth and predictable streams of operating cash flows (whereby it may settle its regular payments of debts). Finally, heavily indebted company, with negative operating cash flows, may stay sustainable, at least in the short run, if it holds enough current assets, that may be marketed (i.e. converted into cash) relatively quickly. Consequently, a diligent evaluation of corporate financial risks should always be based on a combination of indebtedness, liquidity and debt-coverage ratios.

A distinctive feature of the financial risk metrics (as compared to other classes of ratios listed in an introduction to this chapter) is their bias toward a normative analytical approach. Although time trends and industry-wide benchmarks are very important here as well, the individual financial risk ratios are almost always compared to some pre-assumed upper or lower safety thresholds. Accordingly, the evaluation of the Volkswagen Group's financial risk profile, presented in the following sub-sections, will involve all three approaches (i.e. time-series analysis, comparative evaluation and normative approach).

3.3.2 Selected Financial Risk Ratios

Similarly as in the case of profitability ratios, there exists a plethora of metrics that serve to gauge corporate indebtedness, liquidity and debt coverage. Some financial analysts create and use their own modifications of those ratios. However, in the author's opinion a reliable picture of any company's financial risk profile may be drawn with the use of the following set of five simple indicators:

- **Indebtedness ratio**, that divides total liabilities and provisions (i.e. a difference between total assets and total shareholders' equity) by total assets.
- **Current liquidity ratio**, that divides total current (short-term) assets by total current (short-term) liabilities and constitutes the most commonly used short-term liquidity metric.
- **Quick liquidity ratio**, that divides total current (short-term) assets, stripped out from inventories and prepaid expenses, by total current (short-term) liabilities.
- **Coverage of total liabilities by EBITDA**, that divides EBITDA (i.e. earnings before interest, tax, depreciation and amortization) by total liabilities and provisions.
- **Coverage of short-term liabilities by EBITDA**, which divides EBITDA by short-term (current) liabilities.

When calculating debt-coverage ratios, numerous analysts use operating cash flows (instead of EBITDA) as a numerator input. However, the cash flow-based ratios will be discussed with details in Sect. 3.5 of this chapter. Therefore, in this section only EBITDA-based debt-coverage ratios will be computed and interpreted.

A finance literature is quite silent on an optimal or safe value of the total indebtedness ratio (as defined above). It seems obvious, however, that a relatively high financial leverage (i.e. a relatively high share of debts in capital structure) may be more affordable in case of businesses that are featured by relatively low operating risks (e.g. low demand cyclicalities, low operating leverage, stable sale prices, low concentration of customers, etc.). In contrast, firms operating in more turbulent economic environments (e.g. construction companies, real estate developers or car manufacturers) should follow more prudent and conservative financing structures (with a higher share of equity in total assets). However, according to the author's own observations of various capital markets, the subjective general safety thresholds between 60 and 66% are often assumed for the share of total liabilities and provisions in total assets.

Similarly as in the case of the indebtedness, no any unequivocal consensuses in the literature exist, as regards universally applicable safety thresholds for liquidity ratios. In a legendary textbook by Graham and Dodd (1934), a minimum ratio of quick assets to current liabilities, equaling two, is mentioned as a standard for industrial companies. Nowadays, banks, suppliers and other institutions, that extend short-term credit to firms, generally prefer a current ratio substantially in excess of unity (Stickney et al., 2004). This is so because when its value falls

below unity, then corporate fixed assets are being financed partially by short-term borrowings or by a negative working capital, which can be dangerous (Verninmen et al., 2005). However, a firm can face short-term liquidity problems even with its current ratio exceeding one by a sizable margin, when some of its current assets are not easy to liquidate (Palepu et al., 2004). Therefore, even in the oldest textbooks it was noted that the more easily current assets are convertible into cash, the lower proportion of current assets to current liabilities is needed (Saliens, 1924). Industry-specific factors are relevant too. According to Moyer et al. (1995), numerous practitioners view a current ratio of 1.5 as satisfactory for industrial firms, while public utilities may function with considerably lower ratios, since their receivables turn over on a monthly basis, that is much faster than in a typical industrial firm. Retail stores may keep even lower ratios as they distribute fast-moving finished goods (that imply no necessity of holding raw materials or semi-processed goods) and generate mostly cash sales. Accordingly, different types of businesses call for different current ratios (Atrill, 2000). Last but not least, inter-company variations in safety thresholds are not merely driven by business profiles, but also by other risk factors, such as company size. This is so because larger corporations may have more potential funding sources available, including public capital and money markets, that may reduce a size of their liquidity buffers needed, as compared to smaller firms without such an access (Robinson et al., 2012).

Similarly as for the indebtedness and liquidity, there are no unequivocal consensuses about the safety thresholds of debt-coverage ratios. However, some empirical studies found that in order to keep an enterprise sustainable, its managers should ensure that annual EBITDA covers no less than 20% of carrying amount of total liabilities (Welc, 2017a). The author's experience, in turn, suggests that a coverage of short-term liabilities by EBITDA should not fall below about 50% (as a rule of thumb).

One of the most important pitfalls of all financial risk ratios discussed above is a frequent omission of some important financial obligations, such as contingent liabilities, operating lease and rental obligations, in a carrying amount of liabilities reported on a face of balance sheet (with an exception of IFRS, as well as U.S. GAAP, that require a capitalization of all leases since 2019). This problem, as well as an analytical technique helpful in mitigating its distorting effects, is discussed with details in other books (Welc, 2020). However, in spite of a frequent omission of off-balance-sheet liabilities in a calculation of indebtedness, liquidity and debt-coverage ratios (as well as despite a lack of any consensus about the optimal or safe values of the individual ratios), their various versions appear statistically significant in huge majority of statistical models for a bankruptcy prediction, including those presented later in this chapter (Caouette et al., 2008; Charalambous et al., 2000). Particularly, total indebtedness ratio, meant as a quotient of total liabilities and total assets, often turns out to be the most statistically significant of all accounting metrics tested (Beaver et al., 2005; Chava & Jarrow, 2004; Ohlson, 1980; Shumway, 2001; Zmijewski, 1984). This corroborates an extreme usefulness and relevance of the financial risk metrics in a diligent and rigorous financial statement analysis.

Table 3.5 Financial risk ratios of Volkswagen Group as at the end of fiscal years 2007 and 2008

Ratio	Formula applied (items labeled as in the VW's annual report for 2008)	2007	2008
Indebtedness ratio	(Noncurrent liabilities + Current liabilities)/ Total assets	78.0% $= (57,351 + 56,068) / 145,357$	77.7% $= (65,729 + 64,802) / 167,919$
Current liquidity ratio	Current assets/ Current liabilities	1.22 $= 68,516 / 56,068$	1.18 $= 76,163 / 64,802$
Quick liquidity ratio	(Current assets – Inventories – Prepaid expenses) ^a / Current liabilities	0.97 $= (57,351 - 14,031 - 0) / 145,357$	0.90 $= (64,802 - 17,816 - 0) / 167,919$
EBITDA to total liabilities	(Operating profit + Depreciation and amortization ^b) / (Noncurrent liabilities + Current liabilities)	13.4% $= (6,151 + 5,435 + 1,843 + 1,780) / (57,351 + 56,068)$	11.3% $= (6,333 + 5,191 + 1,392 + 1,823) / (65,729 + 64,802)$
EBITDA to short-term liabilities	(Operating profit + Depreciation and amortization ^b) / Current liabilities	27.1% $= (6,151 + 5,435 + 1,843 + 1,780) / 56,068$	22.7% $= (6,333 + 5,191 + 1,392 + 1,823) / 64,802$

^aFor both 2007 and 2008 Volkswagen Group did not report any prepaid expenses (neither on a face of its balance sheet nor in notes to its financial statements), so their value equals zero here

^bData on depreciation and amortization were extracted from the VW's consolidated cash flow statement: Depreciation and amortization expense (5,191 and 5,435 in 2008 and 2007, respectively), Amortization of capitalized development costs (1,392 and 1,843 in 2008 and 2007, respectively), Depreciation of leasing and rental assets and investment property (1,823 and 1,780 in 2008 and 2007, respectively)

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

Table 3.5 presents the values of selected financial risk ratios of Volkswagen Group, computed for fiscal years 2007 and 2008.

The following conclusions may be inferred from Table 3.5:

- At the end of both investigated years the indebtedness of Volkswagen Group seemed rather high, suggesting a significant financial risk. If the upper safety threshold (as a “rule of thumb”), for businesses with average operating risks, is typically assumed at about 60–66%, then its recommendable value should be located much lower for firms with above-average operating risks, such as car manufacturers (in which case the high operating risks are attributable to high cyclicity of demand, high capital intensity, high operating leverage and significant exposure to a volatility of market prices of commodities, such as steel,

copper or aluminum). Accordingly, a more reasonable level of the indebtedness of Volkswagen Group, given the company's operating risks, is probably located somewhere between 45 and 55% (to compensate for its above-average operating risks), instead of 60–66%, not to mention 78% (as observed at the end of fiscal years 2007 and 2008). This means that in both investigated years, the VW's above-average operating risks were magnified (instead of being mitigated) by its increased financial risk, stemming from its relatively high indebtedness.

- Likewise, in the analyzed periods both liquidity ratios of Volkswagen Group lied beneath (or at least on a verge of) their respective lower safety thresholds, suggesting a significant financial risk too. If for the “average-risk” industrial firms, the lower safety thresholds of current and quick ratios are often assumed at 1.20 and 1.00, respectively, then their prudent values for a car manufacturer (even as big as Volkswagen Group) probably lie somewhat higher, in order to create some “cushion” of liquid assets in case of an unexpected contraction of operating cash flows (e.g. due to a sudden global economic slowdown). Meanwhile, at the end of 2008 the values of current and quick ratios of Volkswagen Group lied below 1.20 and 1.00, respectively. This means that in the investigated periods the company's above-average operating risks were accompanied not only by a rather high indebtedness, but also by at most moderate values of liquidity ratios.
- Finally, in the analyzed periods the values of the VW's debt-coverage ratios seemed rather low as well. Their values were not high enough to justify treating them as reliable and strong “cushions” of liquidity, that could compensate for the company's relatively high indebtedness and moderate liquidity ratios. As at the end of 2008, about 11.3% of total liabilities and about 23% of short-term liabilities of Volkswagen Group could be repaid from its consolidated EBITDA, generated in 2008. It means that if exactly the same amount of annual EBITDA is generated repeatedly in the following years (and if the liabilities are repaid only from this source), it would take almost nine years and over four years to repay all the company's total liabilities and short-term liabilities, respectively. Furthermore, it must be noted that the debt-coverage ratios, based on income statement inputs (such as EBITDA), are reliable as long as their underlying data. Meanwhile, as was concluded in the VW's profitability analysis (earlier in the chapter), in both years under investigation the company's operating profits and EBITDAs were boosted by numerous factors of a one-off nature, that called for some dose of skepticism as regards a sustainability of those reported numbers. In other words, it was very likely that in both 2007 and 2008 the VW's sustainable (i.e. adjusted for non-recurring items) debt-coverage ratios lied below the values calculated and presented above.

Table 3.6 compares the financial risk metrics of Volkswagen Group for fiscal year 2008, with their respective medians computed for the company's competitors. As may be seen, a relatively high financial risk exposure seems to be a common phenomenon across the car manufacturing industry (at least in the investigated

Table 3.6 Financial risk ratios of selected car manufacturers in fiscal year 2008

Company	Indebtedness ratio (%)	Current liquidity ratio	Quick liquidity ratio	EBITDA to total liabilities (%)	EBITDA to short-term liabilities (%)
BMW	79.9	0.98	0.78	14.1	28.9
Daimler	75.3	1.06	0.73	11.6	22.2
Fiat Group	82.0	1.27	0.87	12.4	21.6
Ford Motor Company	107.9	1.44	1.33	6.8	20.4
General Motors	193.5	0.59	0.41	-3.3	-7.7
Honda Motor	64.0	1.12	0.86	17.1	29.5
PSA Peugeot Citroen	78.5	1.03	0.83	6.8	8.6
Renault	69.6	0.86	0.71	6.4	7.8
Toyota Motor	63.4	1.01	0.82	18.3	31.5
Medians for the VW's "peers"	78.5	1.03	0.82	11.6	21.6
Volkswagen Group	77.7	1.18	0.90	11.3	22.7

Source Annual reports of individual companies for fiscal year 2008 and authorial computations

period). Even though the Volkswagen Group's indebtedness and liquidity ratios seemed to deviate from their respective recommendable values, they did not differ significantly from their industry-wide averages. Quite the reverse: the company's competitors tended to be slightly more indebted and less liquid than Volkswagen Group. In terms of both EBITDA-based debt-coverage ratios, the company's achievements seemed to be on par with the industry-wide norms.

To conclude, all five examined ratios of indebtedness, liquidity and debt coverage suggested a significant financial risk exposure of Volkswagen Group, as at the end of fiscal years 2007 and 2008. At that time the company was featured by a rather high indebtedness, moderate liquidity and low coverage of its liabilities by EBITDA. Furthermore, in both years its EBITDA seemed to be boosted to unsustainable levels by multiple non-recurring factors. All this means that in the case of Volkswagen Group in 2007 and 2008, the above-average operating risks were accompanied by rather high financial risks (that, in turn, implied a significant investment risk for both equity as well as corporate debt investors). However, as was evidenced, the company's individual financial risk metrics did not deviate noticeably from their respective averages within a sample of its major rivals, which means that the relatively high financial risk exposure seemed to be a phenomenon that was common among the car manufacturing firms (at least in the investigated periods).

3.4 Turnover Ratios

Turnover ratios constitute a third class of financial statement indicators useful in examining a corporate performance. They support profitability and financial risk metrics in assessing managerial efficiency as well as business risks. Asset turnover ratios (in particular their period-to-period changes) constitute also a set of powerful “early warning signals” about a deteriorating quality of reported earnings, brought about by either deliberately aggressive accounting policy or by some negative changes in a given firm’s economic environment.

The following turnover ratios seem to be the most commonly applied:

- **Total assets turnover**, that constitutes a crude measure of an intensity of exploitation of corporate total (operating and non-operating) assets.
- **Fixed operating assets turnover**, that gauges an intensity of utilization of corporate long-term operating assets (and their efficiency in generating sales revenues).
- **Inventory turnover**, that measures a pace with which a given company’s inventories turn over within its operating cycle (i.e. how much time it takes for the purchased or manufactured inventory to generate revenues).
- **Receivables turnover**, that gauges a pace with which corporate receivables accounts are collected.
- **Operating payables turnover**, that quantifies an average time interval during which a given company’s liabilities, resulting from its operations, stay due (i.e. how much time elapses, on average, between a recognition of an operating payable and its following settlement).

There are two alternative ways for computing turnover ratios:

- Either as a number of cycles within a given period, i.e. how many times a given class of assets or payables turns over within a period, or
- As a number of days which elapse, on average, between a time when a given asset or liability is recognized and a time when it is sold or collected or repaid.

Also, there are two approaches to values of balance sheet items that appear as inputs in turnover ratios. Namely, they may be based on period-end carrying amounts (for instance, receivables for 2010 may be represented by receivables reported on December 31, 2010) or, alternatively, they may be averaged across the period (for example, an arithmetic mean from two amounts, as at the ends of 2009 and 2010, may be used as input to a given turnover ratio for 2010). Both approaches have their pros and cons. While period-end values are “fresh” (i.e. represent the most recent past), sometimes they may be distorted by unusual events that happened near the end of an investigated period (e.g. a sharp increase in receivables from a large sales contract, accounted for in late December). In contrast, the averaged amounts tend to be “smoother” and more immune to outlying observations, but they may also subdue some relevant warning signals (e.g. a sharp

Table 3.7 Formulas for selected turnover ratios (for annual periods, consisting of 365 days)

Ratio	Formula for a ratio expressed as a number of cycles within a year	Formula for a ratio expressed as a number of days of turnover
Total assets turnover	Sales revenues/ Total assets	(Total assets/ Sales revenues) × 365 days
Fixed operating assets turnover	Sales revenues/ Fixed operating assets	(Fixed operating assets/ Sales revenues) × 365 days
Inventory turnover	Cost of goods sold/ Inventory	(Inventory/ Cost of goods sold) × 365 days
Receivables turnover	Sales revenues/ Operating receivables	(Operating receivables/ Sales revenues) × 365 days
Operating payables turnover	(Basic operating costs ^a less depreciation and amortization)/ Operating payables	(Operating payables/ Basic operating costs ^a less depreciation and amortization) × 365 days

^a= Cost of goods sold + Selling, general and administrative expenses (including R&D costs)

Source Author

accumulation of excess inventories in the recent past, due to a sharply deteriorating product quality). Therefore, for a sake of simplicity, the former approach (based on year-end amounts) will be followed below.

Table 3.7 presents formulas applied in calculating the turnover ratios listed above. The formulas for ratios that are expressed as a number of days, presented below, assume the annual periods of 365 days. Also, they are based on year-end carrying amounts of balance sheet items (instead of their averaged values). Before computing and interpreting those ratios, it is worth noting that:

- Out of all fixed (long-term) assets held by any enterprise, only intangibles, operating tangibles (i.e. property, plant and equipment) and operating long-term receivables (i.e. those noncurrent receivables that result from past sales of goods and services) participate in revenue generation processes. In other words, these fixed assets are directly linked to corporate sales revenues. In contrast, other long-term assets (such as noncurrent financial investments, investment properties, long-term receivable accounts other than related to sales, long-term prepaid expenses and deferred tax assets), even though offering valuable economic benefits, have no direct relationships with sales revenues. Consequently, to ensure a coherence between numerator and denominator of the fixed assets turnover ratios, only revenue-related long-term assets should be taken into account in

their computations. Note, however, that there exists some inevitable measurement inconsistency between the numerator and denominator here, since some items taken into account are based on their historical costs (intangibles and property, plant and equipment), while others are expressed on a revenue basis (sales revenues and long-term revenue-related receivables).

- Inventories, even though purchased or manufactured to generate revenues, are reported in a balance sheet on their historical cost basis, instead of their current market prices (unless they are written down to impaired amounts). When sold, their carrying amounts are transferred from the balance sheet to income statement, as cost of goods sold (or cost of sales). Accordingly, to ensure a measurement consistency between the numerator and denominator of the inventory turnover formulas, both inputs should be expressed on the cost basis.
- The two common errors in computing receivables turnover ratios are: (1) an omission of revenue-related long-term receivables (i.e. an inclusion of their current portion only), (2) an inclusion of all short-term receivables, regardless of their actual contribution to a revenue generation (e.g. an inclusion of non-operating receivables, such as loans granted to employees). When a given company's marketing strategy results in an existence of some long-term revenue-related receivables (e.g. accounts that correspond to its installment sales or to sales with payment terms longer than twelve months), then such accounts should be treated as part of operating receivables. Otherwise the computed receivables turnover ratios may be materially distorted and may show an untrue picture of an investigated company's performance. In contrast, some short-term receivables (such as tax receivables, employee loans, receivables resulting from government grants or uncollected dividends), even though generating valuable economic benefits, may have no any direct relationships with sales revenues. Consequently, to ensure a coherence between the numerator and denominator of the receivables turnover ratios, only the revenue-related receivable accounts (both long-term and short-term ones) should be taken into account.
- Operating payables are directly related to corporate operating expenses. For instance, when a firm purchases inventories from its supplier, with a deferred payment term, then an amount of a resulting liability (recognized in its balance sheet) is equal to the purchase cost. Accordingly, to ensure a measurement consistency between the numerator and denominator of the payables turnover formulas, all their inputs should be expressed on a cost basis. However, depreciation and amortization charges do not generate any payables (since they reflect an allocation in time of past investment expenditures), so they should be omitted from a calculation. Also, to ensure the coherence between the numerator and denominator of the payables turnover ratios, only those corporate liabilities should be taken into account that are related to the operating expenses. Thus, any interest-bearing financial liabilities (e.g. loans or debts related to issued corporate bonds), as well as deferred revenues (that are reported as part of liabilities but are related to future revenues, instead of the current expenses), should not be included within the operating payables.

It is worth noting, when looking at the formulas disclosed in Table 3.7, that turnover ratios expressed as number of days may also be computed as inverses of the ratios expressed as a number of cycles (multiplied by 365).

Turnover ratios are typically interpreted as follows:

- Ratios expressed as a number of cycles (within a period) inform about how many times, on average, a given item (asset or liability) turns over or rotates within a company. For example, an inventory turnover of 4.0 means that in an investigated period, there were four full cycles of inventories, where one full cycle covers an entire period from a purchase of raw materials and components, through all manufacturing operations (when the inventory is classified as work-in-progress) to a sale of finished goods. In other words, the inventory turnover of 4.0 means that inventories turned over four times within a given timeframe. Some turnover ratios expressed as a number of cycles may also be interpreted in a slightly different, monetary way. For instance, a total assets turnover of 2.5 means that each 1.00 EUR invested (tied up) in corporate assets was able to generate 2.50 EUR of sales revenues in a given period. Regardless of an exact interpretation, an increase/decrease in a value of any asset's turnover, from period to period, means an increase/decrease in an intensity of this particular asset's utilization by a given firm. The increase/decrease in the value of the operating payables turnover, in turn, reflects a shortening/lengthening of an average period of settlement of a given company's operating payables.
- Ratios expressed as a number of days inform about how many days, on average, it takes for a given item of assets or liabilities to turn over. For example, an inventory turnover of 90 days means that in an investigated period, one full cycle of inventories (from a purchase through processing to sale) lasted 90 days, on average. Likewise, a receivables turnover of 35 days means that an investigated firm's receivable accounts were collected after 35 days (from a sale date), on average. Finally, a payables turnover of 45 days means that a company tends to settle its operating liabilities within 45 days, on average (i.e. 45 days after their recognition in its balance sheet).

Values of turnover ratios themselves may be very informative. For example, a receivables turnover of 270 days for a food wholesaler means that it takes as long as about nine months, on average, to collect its receivable accounts (which may seem suspicious or at least hazardous from a financial liquidity perspective). Given a profile of the company's core business operations (a wholesale distribution of non-durable goods), it suggests that the company may be:

- Overly aggressive in its attempts to boost its market share (e.g. by offering excessively long payment terms to its customers), or
- Facing problems with a timely collection of its receivables (that become overdue), or
- Suffering from a weak bargaining power against its major customers (e.g. due to differences in scale of their operations), or

- Involved in some fraudulent accounting practices, aimed at inflating reported revenues by recognizing fictitious sales (that by definition cannot be collected and result in ballooning receivable accounts).

Likewise, a suspiciously long turnover of operating payables, e.g. beyond standard terms observed within a given industry, may be a symptom that a firm is aggressive against its suppliers (by stretching its payment periods to a maximum tolerable) or may face some financial liquidity problems. Generally speaking, time trends of turnover ratios are very informative and useful, often as warning signals about forthcoming operating problems or probable accounting manipulations.

Table 3.8 presents values of the Volkswagen Group's turnover ratios, expressed as numbers of cycles, in fiscal years 2007 and 2008. Table 3.9, in turn, presents the same turnover ratios expressed on a number-of-days basis. Before interpreting those data, it is worth noting that:

Table 3.8 Turnover ratios (expressed as numbers of cycles in a year) of Volkswagen Group in fiscal years 2007 and 2008

Ratio	Formula applied (items labeled as in the VW's annual report for 2008)	2007	2008
Total assets turnover	Sales revenue/ Total assets	0.75 $= 108,897/145,357$	0.68 $= 113,808/167,919$
Fixed operating assets turnover	Sales revenue/ (Intangible assets + Property, plant and equipment + Leasing and rental assets + Financial services receivables)	1.76 $= 108,897/$ $(6,830 + 19,338 +$ $8,179 + 27,522)$	1.48 $= 113,808/$ $(12,291 + 23,121 +$ $9,889 + 31,855)$
Inventory turnover	Cost of sales/ Inventories	6.60 $= 92,603/14,031$	5.42 $= 96,612/17,816$
Receivables turnover	Sales revenues/ (Noncurrent financial services receivables + Trade receivables + Current financial services receivables)	1.87 $= 108,897/$ $(27,522 + 5,691 +$ $24,914)$	1.75 $= 113,808/$ $(31,855 + 5,969 +$ $27,035)$
Operating payables turnover	(Cost of sales + Distribution expenses + Administrative expenses – Depreciation and amortization – Change in obligations arising from sales)/ (Trade payables + Social security + Wages and salaries + Miscellaneous liabilities)	6.18 $= (92,603 + 9,274 +$ $2,453 - 5,435 -$ $1,843 - 1,780 - 983)/$ $(9,099 + 262 +$ $1,587 + 4,309)$	6.09 $= (96,612 + 10,552 +$ $2,742 - 5,191 -$ $1,392 - 1,823 - 370)/$ $(9,676 + 289 +$ $1,741 + 4,910)$

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

Table 3.9 Turnover ratios (expressed as numbers of days) of Volkswagen Group in fiscal years 2007 and 2008

Ratio	Formula applied (items labeled as in the VW's annual report for 2008)	2007	2008
Total assets turnover	(1/Respective turnover ratio expressed as the number of cycles) × 365 days	486.7 days $= (1/0.75) \times 365$	536.8 days $= (1/0.68) \times 365$
Fixed operating assets turnover		207.4 days $= (1/1.76) \times 365$	246.6 days $= (1/1.48) \times 365$
Inventory turnover		55.3 days $= (1/6.60) \times 365$	67.3 days $= (1/5.42) \times 365$
Receivables turnover		195.2 days $= (1/1.87) \times 365$	208.6 days $= (1/1.75) \times 365$
Operating payables turnover		59.1 days $= (1/6.18) \times 365$	59.9 days $= (1/6.09) \times 365$

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

- In a computation of fixed assets turnover ratio not only intangible assets and property, plant and equipment (which are obvious long-term revenue drivers in a car manufacturing industry) were taken into account, but also leasing and rental assets as well as financial services receivables. How could we conclude that the leasing and rental assets are revenue generators? This information is disclosed in several notes to the VW's financial statements. First, Note 1 (presented in Table 2.1 in Chapter 2) clearly shows that "*Rental and leasing business*" constitutes one of five major segments of the VW's operations. Second, in a description of an accounting policy applied to its leasing and rental assets (quoted in Table 2.10 in Chapter 2), Volkswagen Group stated outright that those assets consist mostly of "*vehicles leased out under operating leases*". Accordingly, we may safely conclude that the company's leasing and rental assets belong to its revenue drivers. How, in turn, could we know that the noncurrent financial services receivables are revenue generators too? This conclusion was reached already in Chapter 2, on a ground of Note 16 (presented in Table 2.12 in Chapter 2) to Volkswagen Group's financial statements for fiscal year 2008. Based on those disclosures, we inferred that the receivables related to customer and dealer financing (that made up the company's financial services receivables) are similar in substance to trade receivables, in a sense that they stem from credits granted to customers and dealers to support the company's sales. To sum up, it is entirely legitimate to treat both leasing and rental assets as well as financial services receivables as the VW's revenue generators and to take them into account when examining the turnover of the company's fixed operating assets. In contrast, the other items of the VW's noncurrent assets were treated as unrelated to its sales revenues. Investment property generates income that is treated as other operating income (instead of sales revenue), according to an information disclosed in Note 5 (presented in Table 2.2 in Chapter 2). Equity-accounted investments generate profits or losses which are reported in a

separate line item of the company's income statement (presented in Table 1.1 in Chapter 1), labeled as "*Share of profits and losses of equity-accounted investments*". Other equity investments, in turn, generate income that is part of other financial result, according to an information disclosed in Note 9 (presented in Table 2.6 in Chapter 2). Other receivables and financial assets include mostly positive values of derivatives and loans to joint ventures and affiliates (as may be seen in Note 17, not presented in this book) and as such they are part of the company's investing (not operating) activities. Finally, tax receivables and deferred tax assets are related to the company's tax burdens.

- For the same reasons, all financial services receivables (both noncurrent and current ones) are treated as revenue generators. Accordingly, they are taken into account in a computation of receivables turnover ratios, together with trade receivables. In contrast, the other classes of the VW's receivable accounts, disclosed in its balance sheet, are treated as non-operating items.
- As was stated before, total depreciation and amortization charges (which in the VW's case constitute a sum of depreciation and amortization expense, amortization of capitalized development costs and depreciation of leasing and rental assets and investment property) do not generate any payables, so they are subtracted from a pool of operating costs (i.e. a sum of cost of sales, distribution expenses and administrative expenses) when computing payables turnover ratios. However, the other individual components of the VW's payables turnover ratio (apart from trade payables), which were taken into account, are more nuanced and call for a more detailed explanation. First, obligations arising from sales, which are part of noncurrent and current other provisions (according to the disclosures presented in Note 29, presented in Table 2.21 in Chapter 2), "*primarily comprise warranty claims*" (as the company explained in a narrative information provided to Note 29, referenced to in Table 2.22). At the same time, in its description of significant accounting policies related to expense recognition (not presented in this book), the company claimed that "*cost of sales [...] also includes the costs of additions to warranty provisions*". Accordingly, changes in warranty provisions constitute part of the VW's operating costs. However, similarly as depreciation and amortization, they are non-cash charges that do not create any current payables (since they reflect just the company's own estimates of future warranty costs). Thus, for a consistency it is legitimate to subtract changes of those provisions from the total operating costs. According to the data disclosed in Note 29 (Table 2.21), in 2007 and 2008 those changes amounted to 983 EUR million [= 10,135 – 9,152] and 370 EUR million [= 10,505 – 10,135], respectively. Accordingly, these amounts were subtracted from the total operating costs, when computing payables turnover ratios. As regards liabilities relating to social security and wages and salaries, as well as miscellaneous liabilities, the relevant numerical data may be found in Note 26 (presented in Table 2.19 in Chapter 2). Even though the company did not offer any narrative information on where in its income statement the changes of those items were reflected (i.e. into what cost item they fell to), it seems likely that they are part of the VW's core business operations (although this

is the author's subjective judgment). Accordingly, those three classes of liabilities were added to trade payables, to arrive at the estimates of the VW's total operating payables.

The above discussion demonstrates how important it is to read not only the given company's primary financial statements, but also respective notes to them, where plenty of relevant information (both in a numerical as well as a narrative form) may be found.

The following general conclusions may be derived from Tables 3.8 and 3.9:

- Each 1.0 EUR invested (tied up) in the VW's total consolidated assets was able to generate approximately 68 cents and 75 cents of sales revenues in fiscal years 2008 and 2007, respectively. It means that the VW's total assets turned over, on average, every 536.8 days and 486.7 days in those two periods.
- Each 1.0 EUR of the company's fixed operating assets was able to generate about 1.48 EUR of revenues in 2008 and about 1.76 EUR a year earlier (which means that the fixed operating assets rotated every 246.6 days in 2008 and 207.4 days in 2007, on average).
- The company's total inventories rotated 5.42 times in 2008 and 6.60 times in 2007. This means that its inventory cycle (i.e. a period from a purchase of raw materials and components, through all manufacturing operations, to storage of finished goods and finally their sale) averaged about 67.3 days and 55.3 days in 2008 and 2007, respectively.
- The company's operating receivables turned over 1.75 and 1.87 times in fiscal years 2008 and 2007, respectively. This means that about 208.6 days elapsed, on average, between a sale transaction and a collection of the resulting receivable in 2008, while a year before it was approximately 195.2 days.
- Accordingly, all the examined classes of the VW's assets (i.e. fixed operating assets, inventories and receivable accounts) experienced a noticeable lengthening of their respective turnover periods in fiscal year 2008, which constituted **a warning signal about a rising probability of a deterioration of the company's financial results in the near future**.
- In both investigated periods the company settled its operating payables after slightly less than two months, on average (with its operating payables turnover ratios of 59–60 days).

Table 3.10 presents the turnover ratios (expressed as numbers of cycles) of Volkswagen Group in fiscal year 2008, on the background of their respective medians computed for the company's "peers". As may be seen, all four investigated classes of the VW's assets rotated slower than averages among its rivals. Particularly striking was the turnover of receivable accounts, whose industry-wide median was more than three times higher than the value obtained for Volkswagen Group. Furthermore, the company's ratio (1.75) lagged behind the lowest value obtained among its competitors (2.72 in the case of General Motors) by a high margin. It

Table 3.10 Turnover ratios (expressed as numbers of cycles in a year) of selected car manufacturers in fiscal year 2008

Company	Total assets turnover	Fixed operating assets turnover	Inventory turnover	Receivables turnover	Operating payables turnover
BMW	0.53	0.91	5.45	3.12	2.47
Daimler	0.73	1.46	4.35	12.42	11.02
Fiat Group	0.96	2.95	4.27	3.42	3.06
Ford Motor Company	0.67	1.28	14.75	9.90	8.69
General Motors	1.64	3.69	11.31	2.72	2.71
Honda Motor	0.95	1.82	7.13	6.72	5.90
PSA Peugeot Citroen	0.88	2.66	5.79	3.63	3.35
Renault	0.59	2.09	5.44	5.65	4.99
Toyota Motor	0.81	1.91	8.69	5.68	4.64
Medians for the VW's "peers"	0.81	1.91	5.79	5.65	4.64
Volkswagen Group	0.68	1.48	5.42	1.75	6.09

Source Annual reports of individual companies for fiscal year 2008 and authorial computations

may suggest that either the company followed an aggressive competitive strategy, by offering to its clients an unusually long (as compared to industry “norms”) debt payment terms, in order to boost market share, or there were perhaps some accounting issues (e.g. inadequate impairment write-downs of overdue receivable accounts), or a combination of both. Also, it was possible that unlike Volkswagen Group, some of its competitors kept significant parts of their operating receivables off-balance sheet (e.g. in their associated companies, accounted for with an equity method, instead of a full financial statement consolidation). Anyway, such a striking deviation of the company’s receivables turnover ratio (that might be safely labeled as an outlier), from the industry-wide standard, called for its more detailed and diligent scrutiny. In contrast to the asset turnover ratios, a pace of a rotation of the VW’s operating payables seemed relatively quick, as compared to the industry-wide median, which suggests that the company settled its debts to suppliers within relatively short timeframes (i.e. faster than most of its competitors).

3.5 Cash Flow Analysis

There is an old proverb (not entirely true) among members of a financial community, according to which “*profit is just an accountant’s opinion, cash is king*”. Because of this, an evaluation of a structure and trends of corporate cash flows constitutes an important component of an entire financial statement analysis, particularly from a credit risk perspective (Ganguin & Bilardello, 2005; Jury, 2012).

Typically it begins with an examination of the structure of cash flows generated by an investigated firm (Dickinson, 2011; Jantadej, 2006). Tables 3.11 and 3.12 present and exemplify eight possible combinations of corporate cash flows.

First four combinations, shown in Table 3.11, correspond to those circumstances in which an enterprise is able to generate positive operating cash flows (that are deemed a pre-condition for classifying a given business as financially sound). Four alternative scenarios may be considered here:

- **Scenario 1**—Positive operating cash flows are accompanied by negative investing cash flows and negative financing ones. This is the most common combination among healthy and mature businesses, particularly “cash cows” that generate more operating cash than they need for their reinvestments (with a resulting excess cash being distributed to shareholders, as dividends or share buybacks, or spent on repayments of financial debts borrowed in earlier periods).
- **Scenario 2**—Positive operating cash flows are accompanied by positive investing cash flows and negative financing ones. This is common among relatively healthy (profitable) businesses, where however some restructuring activities (e.g. disposals of some business units or idle fixed assets) are undertaken. The company’s positive operating and investing cash flows are either distributed as dividends or used in a financial restructuring (e.g. reducing a share of financial liabilities in a capital structure). This scenario is also met in cases of profitable firms that in past periods accumulated significant amounts of money invested in marketable securities, which are now disposed of (with resulting positive investing cash flows) in order to collect cash needed for planned significant investment projects (e.g. building new factory or acquiring another business).
- **Scenario 3**—Positive operating cash flows are accompanied by negative investing cash flows and positive financing ones. This is a common combination among profitable, fast-growing and capital-intensive businesses, whose operating cash flows are positive but too small to be able to fund current and planned investment projects. As a result, a company bridges its funding gap (i.e. an excess of investment outflows over operating inflows) by either borrowing or issuing new equity (or both), with resulting positive financing cash flows.
- **Scenario 4**—Positive operating cash flows are accompanied by positive investing cash flows and positive financing ones. This combination is quite rare and occurs temporarily. It usually reflects a deep re-shaping of a given company’s core business operations. A firm is profitable and generates positive operating cash but it undertook activities aimed at disposing of those assets or business units that no longer fit its strategy (with resulting positive investing cash flows) and simultaneously borrows or issues equity (with resulting positive financing cash flows) to generate funds needed for planned significant investment projects.

Positive operating cash flows typically (but not always) constitute a symptom of a healthy and sustainable business, particularly in case of Scenario 1 discussed above. In contrast, negative operating cash flows should always be interpreted as a

Table 3.11 Four possible combinations of corporate cash flows with positive operating cash

No.	Cash flows ^a			Real-life example			
	OCF	ICF	FCF	OCF	ICF	FCF	Comment ^b
1	+	-	-	Apple—fiscal year ended Sept. 27, 2014 (data in USD billion)			
				59.7	-22.6	-37.5	Apple's earnings amounted to 39.5 USD billion. D&A and increases in payables contributed positively to OCF, while increases in receivables negatively. Negative ICF resulted mostly from excess of purchases over disposals of securities, while negative FCF stemmed mostly from distributions to shareholders (dividends and repurchases of common stock)
2	+	+	-	Renault—fiscal year ended Dec. 31, 2010 (data in EUR billion)			
				2.0	1.4	-1.5	Renault's earnings amounted to 3.5 EUR billion. D&A contributed positively to OCF, while increases in receivables as well as repayments of payables contributed negatively. Positive ICF resulted from proceeds from sale of Volvo's shares for 3.0 EUR billion (which exceeded capital expenditures), while negative FCF stemmed mostly from repayments of financial debts (with non-significant dividend payments)
3	+	-	+	Sony—fiscal year ended March 31, 2010 (data in Yen billion)			
				912.9	-746.0	365.0	Sony's earnings amounted to 13.0 Yen billion. However, D&A, decrease in inventories and increase in payables contributed positively to OCF, while increase in film costs (prepaid expenses) contributed negatively. Negative ICF resulted mostly from investments on fixed assets and advances in financial service business (that exceeded proceeds from sale of securities). Positive FCF was driven by proceeds from issuance of new debt and growing deposits from customers (net of repayments)

(continued)

Table 3.11 (continued)

No.	Cash flows ^a			Real-life example			
	OCF	ICF	FCF	OCF	ICF	FCF	Comment ^b
4	+	+	+	Carrefour—fiscal year ended Dec. 31, 2012 (data in EUR billion)			
				2.0	0.3	0.5	Carrefour's earnings (pre-tax) amounted to 0.6 EUR billion. Excess of OCF over profit resulted mostly from D&A and increases in provisions. Positive ICF was driven by proceeds from sale of operations in Colombia and Malaysia for 2.0 EUR billion (that exceeded expenditures on acquisitions of fixed assets), while positive FCF resulted mostly from proceeds from issuance of new debt (which exceeded debt repayments and dividend payouts)

^aOCF means operating cash flows, ICF means investing cash flows, FCF means financing cash flows

^bD&A means depreciation and amortization

Source Author (on the basis of annual reports of individual companies)

warning signal and a symptom of an increased investment risk. It must be kept in mind, however, that negative operating cash flows tend to be reported by two very different types of businesses:

- Mature firms in financial troubles (and with a high bankruptcy risk) that are no longer able to generate positive cash from core business operations, either due to poor management or adverse trends in an economic environment (or both).
- Young and fast-growing companies, with prospective (although often risky) business models, that are not yet able to generate positive cash flows from operations, due to their high operating expenses (e.g. on R&D, promotion, etc.), sizable increases in non-cash operating assets (i.e. rising inventories and receivables) and still low sales revenues.

The following four structures of cash flows, shown in Table 3.12, may be observed in case of businesses that are unable to generate positive operating cash flows:

- **Scenario 5**—Negative operating cash flows are accompanied by negative investing cash flows and negative financing ones. This is a rare and hazardous

Table 3.12 Four possible combinations of corporate cash flows with negative operating cash

No.	Cash flows ^a			Real-life example			
	OCF	ICF	FCF	OCF	ICF	FCF	Comment ^b
5	—	—	—	Ford Motor—fiscal year ended Dec. 31, 2008 (data in USD billion)			
				—0.2	—3.1	—9.1	In 2008 Ford incurred a loss of 14.7 USD billion, that was a main driving force for its negative OCF. At the same time rising financial receivables, purchases of securities (net of disposals) and capital expenditures drove ICF to below zero. Negative FCF, in turn, resulted from repayments of debts (that exceeded inflows from new borrowings)
6	—	+	—	General Motors—fiscal year ended Dec. 31, 2006 (data in USD billion)			
				—11.8	19.7	—3.8	In 2006 GM incurred a loss of 2.0 USD billion. While D&A was the main positive contributor to OCF, it was more than offset by an increase in working capital. Positive ICF resulted from sales of securities, financial receivables and business units (that exceeded purchases of fixed assets and marketable securities), while negative FCF was driven by repayments of debt (that exceeded proceeds from new borrowings)

(continued)

Table 3.12 (continued)

No.	Cash flows ^a			Real-life example			
	OCF	ICF	FCF	OCF	ICF	FCF	Comment ^b
7	-	-	+	Tesla—fiscal year ended Dec. 31, 2015 (data in USD billion)			
				-0.5	-1.7	1.5	In 2015 Tesla incurred a loss of 0.9 USD billion. D&A, increases in operating payables, deferred revenues and resale value guarantees contributed positively to OCF, but they were unable to offset a huge increase in inventories and operating lease vehicles. Negative ICF resulted from purchases of operating fixed assets, while positive FCF was driven by an issuance of common stock for 0.7 USD billion and proceeds from borrowings and leases (net of repayments) of 0.8 USD billion
8	-	+	+	Air Berlin—fiscal year ended Dec. 31, 2016 (data in EUR billion)			
				-0.5	0.2	0.3	In 2016 Air Berlin incurred a loss of -0.8 EUR billion, which was a main factor responsible for its negative OCF. Positive ICF resulted from disposals of tangible and intangible fixed assets, as well as from disposal of a company's touristic business. Positive FCF, in turn, was driven by an issuance of new financial liabilities (that exceeded repayments of past borrowings by as much as twice)

^aOCF means operating cash flows, ICF means investing cash flows, FCF means financing cash flows

^bD&A means depreciation and amortization

Source Author (on the basis of annual reports of individual companies)

combination, since a company's cash is drained by all its activities. Accordingly, such a circumstance is unsustainable and must be transitory. A business burns cash on its core business operations (typically due to operating losses) but it attempts to re-shape its operations by investing in new assets (with investing outflows exceeding proceeds from disposals of idle assets or business units), while simultaneously facing repayments of financial debts borrowed in earlier periods. Investing money in corporate bonds or equity interests of such a firm implies a high risk, since if its restructuring attempts turn out to be unsuccessful, it may quickly get on a verge of bankruptcy.

- **Scenario 6**—Negative operating cash flows are accompanied by positive investing cash flows and negative financing ones. This scenario is similar to the preceding one, but here the proceeds from disposals of idle assets and business units exceed the expenditures on purchases of new assets (with resulting positive investing cash flows). However, this still constitutes a risky combination of cash flows, since a business burns cash on its core operations (typically due to operating losses) and simultaneously it must cope with repayments of financial debts borrowed in earlier periods.
- **Scenario 7**—Negative operating cash flows are accompanied by negative investing cash flows and positive financing ones. This scenario is quite typical for young, start-up and fast-growing businesses, which are not yet able to generate positive cash on core business operations, due to still low revenues (if any) and high operating expenses (often related to research and development as well as marketing activities). A company also spends significant amounts of money on tangible, intangible and financial assets, necessary to grow its operations (with resulting negative investing cash flows), while bridging its funding gap by issuing new equity shares (with resulting positive financing cash flows). The equity investors are willing to pour their money into the company (often repeatedly), since they believe that it burns its cash only temporarily (which is justified given the company's early stage of development) and will start generating positive cash flows in the future.
- **Scenario 8**—Negative operating cash flows are accompanied by positive investing cash flows and positive financing ones. The combination is equally risky as Scenario 5 and Scenario 6. A company burns cash on its core business operations (due to operating losses) and it attempts to support its financial liquidity by disposing of some idle assets or business units (with resulting positive investing cash flows). However, to keep its operations going, only some of its fixed assets may be sold (otherwise the company would self-liquidate). With negative operating cash flows and limited availability of the idle assets to be disposed of, the company must bridge its funding gap either by borrowing or by issuing new equity (or both), with the resulting positive financing cash flows. It is worth noting that in such circumstances, it is often very difficult to find investors willing to pour their money into such a risky (and almost bankrupt) business. Consequently, often the positive financing cash flows reflect injections of cash (either as equity or loans) by some related parties, such as a parent company or some government-related agencies.

Let's now compare the breakdowns of cash flows reported for fiscal year 2008 by Volkswagen Group as well as its selected competitors. As may be seen in Table 3.13, in that period positive operating cash combined with negative investing and positive financing cash flows constituted the most common structure among global car manufacturers. Six out of ten firms (including Volkswagen Group) within a sample reported such a breakdown of their cash flows. It means that in a face of a worsening economic environment, a large number of car manufacturers had to look for new capital (either equity or debts), despite generating positive cash flows from their core business operations. In contrast, only one company (Daimler) reported cash flow breakdown that is considered typical for a "cash cow" business (i.e. positive operating cash accompanied by negative investing and negative financing cash flows). The remaining three firms (Ford, General Motors and Renault) burned cash on their core business operations, which implied a rising financial risk (that indeed materialized in the following year in the case of General Motors, who had to file for a bankruptcy protection). It is worth noting that all ten competitors had negative investing cash flows in fiscal year 2008.

Apart from examining a structure of corporate cash flows, practitioners of a financial statement analysis apply also various cash flow-based accounting ratios (Aziz et al., 1988; Beaver, 1966; Gilbert et al., 1990). They are typically used in quantifying a given company's financial risk (i.e. a risk of losing financial liquidity) as well as in assessing a general reliability of reported corporate accounting earnings. The following three ratios are commonly applied:

- **Coverage of total liabilities by operating cash**, that divides operating cash flows by total liabilities and provisions.
- **Coverage of short-term liabilities by operating cash**, that divides operating cash flows by short-term liabilities.

Table 3.13 Breakdowns of cash flows reported by selected car manufacturers in fiscal year 2008

Company	Operating cash flows	Investing cash flows	Financing cash flows	Scenario
BMW	+	-	+	3
Daimler	+	-	-	1
Fiat Group	+	-	+	3
Ford Motor Company	-	-	-	5
General Motors	-	-	+	7
Honda Motor	+	-	+	3
PSA Peugeot Citroen	+	-	+	3
Renault	-	-	+	7
Toyota Motor	+	-	+	3
Volkswagen Group	+	-	+	3

Source Annual reports of individual companies for fiscal year 2008

- **Coverage of after-tax EBITDA by operating cash**, that divides a difference between operating cash flows and after-tax EBITDA by sales revenues.

The first two of the above metrics are twins of debt-coverage ratios discussed earlier, in Sect. 3.3. The only difference is that here the actual operating cash flows (instead of EBITDA, that constitutes only a simplistic proxy for operating cash) are assumed as a primary source of funds available to repay corporate debts. Accordingly, an interpretation of those two financial risk metrics is similar to the interpretation of the EBITDA-based debt-coverage ratios.

The third ratio, in turn, is often applied as a general indicator of a reliability of reported corporate operating profits. It is assumed that accounting earnings should be covered by operating cash flows (which implies a non-negative value of the ratio) if they are to be deemed reliable and sustainable. In contrast, when operating cash flows lag behind operating profits significantly (particularly when positive and rising earnings are accompanied by negative operating cash), then the value of the ratio is negative and should be treated as a “red flag” (suggesting possible earnings manipulations or some hazardous operating imbalances, e.g. exceedingly fast growth of inventories or receivables). Positive but falling values of this metric, from period to period, are considered as an early warning signal too, suggesting a rising probability of a forthcoming deterioration of an investigated company’s profitability. In contrast, positive and growing value of the ratio is interpreted as a leading indicator of an improving profitability in the near future. However, it must be remembered that this metric may generate false signals, particularly in case of firms in financial troubles, whose operating cash flows tend to be boosted temporarily (and unsustainably) just before their bankruptcy filings. Therefore, like all other tools of a financial statement analysis, a coverage of the after-tax EBITDA by operating cash flows should never be interpreted mechanically and blindly.

Table 3.14 presents values of cash flow-based ratios of Volkswagen Group, computed for fiscal years 2007 and 2008.

The following conclusions may be inferred from Table 3.14:

- All three investigated ratios deteriorated between 2007 and 2008. The two debt-coverage ratios fell significantly, while a coverage of after-tax EBITDA by operating cash turned from a positive value to a negative one.
- In the analyzed periods the values of the VW’s cash flow-based debt-coverage ratios seemed to be rather low. Even though positive, they were not high enough to justify treating them as reliable and strong “buffers” of a financial liquidity. As at the end of 2008, about 8.3% of total liabilities and about 16.7% of short-term liabilities of Volkswagen Group could be repaid from its consolidated operating cash flows, reported for fiscal year 2008.
- A decline (to a negative value) of the coverage of after-tax EBITDA by operating cash flows constituted a warning signal, suggesting a high probability of a deterioration of the company’s operating profits in the following periods.

Table 3.14 Selected cash flow-based ratios of Volkswagen Group in fiscal years 2007 and 2008

Ratio	Formula applied (items labeled as in the VW's annual report for 2008)	2007	2008
OCF ^a to total liabilities	OCF ^a / (Noncurrent liabilities + Current liabilities)	13.8% $= 15,662 / (57,351 + 56,068)$	8.3% $= 10,799 / (65,729 + 64,802)$
OCF ^a to short-term liabilities	OCF ^a / Current liabilities	27.9% $= 15,662 / 56,068$	16.7% $= 10,799 / 64,802$
Coverage of after-tax EBITDA ^b by OCF ^a	[OCF ^a – (EBITDA ^b – Income tax)]/ Sales revenues	2.6% $= [15,662 – (6,151 + 5,435 + 1,843 + 1,780 – 2,421)] / 108,897$	-1.8% $= [10,799 – (6,333 + 5,191 + 1,392 + 1,823 – 1,920)] / 113,808$

^aOCF means operating cash flows

^bIn computing after-tax EBITDA the same inputs on depreciation and amortization as in Table 3.1 have been used, while income tax numbers have been extracted from the VW's income statement
Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

Accordingly, that ratio implied a low sustainability of the VW's operating profits reported for 2008, either due to aggressive accounting practices or due to some operating imbalances (or both).

Table 3.15 presents the cash flow-based ratios of Volkswagen Group for fiscal year 2008, on the background of their respective medians computed for a sample of the company's "peers". As may be seen, despite a deterioration of all three cash flow-based ratios in 2008, Volkswagen Group performed relatively well, as compared to its rivals. The company's total and short-term liabilities were covered by its reported operating cash flows to a much larger extent than the averages for its "peers". Also, a negative coverage of the after-tax EBITDA by operating cash flows seemed to be an industry-wide phenomenon, with only two Japanese firms (Honda and Toyota) able to maintain positive values of that ratio in 2008. Despite the Volkswagen Group's negative value of this metric, it seemed to look better than the median for the company's competitors, although it was somewhat misleading and resulted from the VW's controversial reporting of its consolidated cash flows for fiscal year 2008, as demonstrated in other books (Welc, 2020).

Even though an examination of the level, structure and trends in corporate cash flows is very important in evaluating corporate performance and sustainability, it is also one of the most abused part of a financial statement analysis. The proverb (or rather myth) cited in the first sentence of this section suggests that while reported accounting earnings may be unreliable (e.g. due to "creative accounting" practices), cash flows are immune to any material manipulations. This is not true, however, since reported corporate cash flows are prone to relevant credibility issues as well (Zhang, 2008). As discussed with more details in other books (Welc,

Table 3.15 Cash flow-based ratios of selected car manufacturers in fiscal year 2008

Company	OCF ^a to total liabilities (%)	OCF ^a to Short-term liabilities (%)	Coverage of after-tax EBITDA by OCF ^a (%)
BMW	13.5	27.7	-0.9
Daimler	3.2	6.1	-7.6
Fiat Group	0.8	1.3	-9.1
Ford Motor Company	-0.1	-0.2	-11.1
General Motors	-6.9	-16.0	-3.0
Honda Motor	14.0	24.1	1.1
PSA Peugeot Citroen	0.1	0.2	-6.2
Renault	-0.5	-0.7	-7.7
Toyota Motor	14.5	25.0	0.5
Medians for the VW's "peers"	0.8	1.3	-6.2
Volkswagen Group	8.3	16.7	-1.8

^aOCF means operating cash flows

Source Annual reports of individual companies for fiscal year 2008 and authorial computations

2020), reliability and comparability of reported cash flows may be eroded by the following accounting “gimmicks” (among others):

- Aggressive capitalization of operating expenses in carrying amounts of fixed assets.
- Disposals of receivable accounts in factoring transactions.
- Sharp liquidations of inventories in “fire sale” transactions.
- Aggressive extensions of payment terms of operating payables.
- Loans granted to customers and treated as alleged financial investments (rather than increases in trade receivables).

Due to those issues (among others), an empirical research on the usefulness of cash flows in a financial distress prediction produced somewhat disappointing results. Many researchers indeed found that various cash flow-based ratios are statistically significant predictors of a forthcoming bankruptcy (Bhandari & Iyer, 2013; Casey & Bartczak, 1985; Gentry et al., 1985; Khan & Guruli, 2015; Ohlson, 1980; Unegbu & Adefila, 2013; Ward & Foster, 1997). However, Gupta et al. (2014), in their study of British small and medium-sized enterprises, found that a presence of operating cash flow information does not improve a forecasting accuracy of the distress prediction models. Likewise, the author's own research found that cash flow-based debt-coverage ratios are not better than EBITDA-based ones, as warning signals about the forthcoming bankruptcy filings of Polish public firms (Welc, 2017a, 2017b). This stems from multiple weaknesses of reported

cash flows (discussed with details in other books) that erode their reliability, particularly in periods preceding corporate financial defaults. Accordingly, reported cash flows themselves, as well as the ratios based on them, should not be trusted blindly. Instead, their interpretation and scrutiny should be combined with other profitability and financial risk metrics.

3.6 Business Valuation Ratios

In contrast to all financial statement ratios discussed so far in this chapter, **valuation ratios** (also labeled as **market ratios** and **valuation multiples**) do not serve to evaluate corporate economic performance and financial risks. Instead, they are applied in estimating fair values of businesses as well as in comparing relative market values of various firms (Damodaran, 1996; Evans & Bishop, 2001; Greenwald et al., 2001; Jones, 1998; Montier, 2009; Monks & Lajoux, 2011). A philosophy that stays behind valuation multiples boils down to anchoring a market value of a given company's equity (which is a product of a value of its one share and a number of its shares outstanding on a valuation date), or value of its enterprise (defined as a sum of market value of equity and book value of net debt), at one of so-called value drivers, such as sales revenues, earnings, net assets or operating cash flows.

The following multiples are commonly applied in business valuations:

- **Price to sales (P/S)**, that divides a firm's market capitalization (i.e. a market value of its equity) by its annual sales revenues.
- **Price to EBITDA (P/EBITDA)**, that divides the market capitalization by a valued company's annual EBITDA.
- **Price to EBIT (P/EBIT)**, that divides the company's market capitalization by its annual operating profit (EBIT).
- **Price to net earnings (P/E)**, that divides the company's market capitalization by its annual net (after-tax) earnings.
- **Price to book value (P/BV)**, that divides the company's market capitalization by a book value of its shareholders' equity on a valuation date.
- **Price to operating cash flows (P/OCF)**, that divides company's market capitalization by its annual operating cash flows.

Although commonly applied in a valuation practice and regularly published by various investment media, some of the abovementioned multiples are not logically and theoretically sound. This relates to P/S, P/EBITDA, P/EBIT and P/OCF ratios, whose numerators (i.e. a market value of equity) are not coherent with their respective denominators. A reason is that corporate revenues, operating profits and operating cash flows are attributable not only to a given firm's shareholders, but also to its creditors (e.g. banks), as well as non-controlling interests in equity of its subsidiaries (if any). Therefore, numerous financial analysts use the following, more coherent versions of those four multiples:

- **Enterprise value to sales (EV/S)**, that divides an investigated company's total enterprise value (i.e. a sum of market value of its equity, net debt and non-controlling interests) by its annual sales revenues.
- **Enterprise value to EBITDA (EV/EBITDA)**, that divides a company's enterprise value by its annual EBITDA.
- **Enterprise value to EBIT (EV/EBIT)**, that divides a company's enterprise value by its annual operating profit (EBIT).
- **Enterprise value to operating cash flows (EV/OCF)**, that divides a company's enterprise value by its annual operating cash flows.

Enterprise value (EV) is typically computed as a sum of market value of equity (i.e. a market capitalization), book value of net debt and book value of non-controlling interests (if any). Net debt, in turn, constitutes a difference between a given company's total financial (interest-bearing) liabilities on one side and its cash, cash equivalents and marketable securities on the other side. Consequently, EV-based multiples are coherent and theoretically sound, but more "data-hungry" than their P/S, P/EBITDA, P/EBIT and P/OCF counterparts. They are also less objective, since sometimes they call for some subjective analytical judgments, about an economic substance of various corporate assets and liabilities (i.e. whether they are related to a given company's core business operations or instead constitute a part of its net debt). In contrast, equity-based multiples (whose denominators include a market value of equity only), despite being incoherent, are more objective and less data consuming.

It must be noted that P/E (price to net earnings) and P/BV (price to book value of equity) ratios do not have their EV-based counterparts, since they are coherent. Net earnings is an income statement number that is attributable to shareholders only, since it is computed after all interest expenses (which are attributable to creditors) are taken into account. Likewise, book value of equity (net assets) is a balance sheet number that constitutes a difference between a firm's total assets and its total liabilities, including financial debts. Therefore, the book value of equity corresponds to economic benefits attributable to shareholders only. Accordingly, both P/E as well as P/BV are theoretically sound and have consistent numerators and denominators.

A main advantage of earnings-based multiples (i.e. P/EBITDA, EV/EBITDA, P/EBIT, EV/EBIT and P/E) lies in their logical and relatively easy interpretation. This is because corporate profits, meant as a difference between revenues and expenses, are intuitively understandable for most people, including those with no any accounting or financial background. However, the earnings-based multiples (based on historical, not forecasted data) are burdened with the following issues:

- They are applicable only to businesses with positive profits, which makes them useless in valuing unprofitable ones (since negative multiples do not have economic sense and interpretation).

- They are vulnerable to outlying observations (for instance, when a given company's earnings are only marginally positive, then its earnings-based multiples tend to be abnormally high).
- Inter-company differences in accounting policies applied (for instance, FIFO vs. LIFO inventory methods) significantly reduce a comparability of reported corporate earnings.
- Corporate earnings tend to show a high variability in time, which means that the earnings-based multiples are also featured by a substantial instability.

The main advantages of P/BV multiple (over the income-based ones) include: its higher immunity to distorting effects of outlying observations, its higher stability in time and its applicability in valuing majority of loss-incurring firms (whose shareholders' equity typically stays positive even in periods of temporary losses). However, P/BV is prone to the same comparability issues (as earnings-based ratios), brought about by inter-company differences in accounting policies. Furthermore, it has a limited usefulness in case of businesses whose value added is attributable mostly to their off-balance sheet assets (e.g. legal, advertising, business consulting or IT firms) and whose earnings are regularly distributed as dividends (because such firms may keep relatively low shareholders' equity due to their low capital-intensity).

A main advantage of revenue-based multiples (P/S and EV/S) lies in their relative stability in time, due to a lower volatility of sales revenues (as compared to earnings and shareholders' equity), observed in case of many enterprises. Furthermore, revenue-based ratios may be useful in valuing young and not-yet-profitable businesses, with negative shareholders' equity (resulting from deep accumulated start-up losses that exceed a paid-in capital). However, unlike the earnings and net assets, corporate revenues themselves are not a direct driver of a business value (since only those revenues generate value that are capable of generating positive current or future cash flows).

Finally, an advantage of cash flow-based multiples (P/OCF and EV/OCF) lies in their theoretical soundness, because the real cash flows (instead of revenues, profits or net assets, which are only accounting numbers) matter for any firm's shareholders. No any business may survive and create a satisfactory return to shareholders without a capability of generating positive recurring operating cash flows. However, a main disadvantage of the P/OCF and EV/OCF multiples lies in a relatively high volatility of corporate operating cash flows (that make those valuation metrics highly variable as well).

Depending on a time dimension of their denominators, the following three alternative versions of valuation multiples may be met in practice:

- **Trailing multiples**, where a business value (either a market capitalization of equity or an enterprise value) is divided by the most recent observation of a given denominator. For example, a trailing P/S ratio at the end of March, 2018,

is computed by dividing a given company's market capitalization, as on March 31, 2018, by its annual sales revenues in the most recent annual period, i.e. the entire 2017. Likewise, the trailing P/E multiple on September 30, 2018, would be computed as a quotient of a market value of equity on that day and the company's net earnings for the four preceding quarters (last twelve months), i.e. between the beginning of the third quarter of 2017 and the end of the second quarter of 2018 (provided that the quarterly data are available). This is a commonly applied approach and will be followed in this book.

- **Long-term (averaged) multiples**, where a current business value is divided by an average value of a given denominator, across several preceding years. For instance, a long-term P/E multiple, on March 31, 2018, could be computed by dividing a firm's market capitalization, as at the end of March, 2018, by an arithmetic mean of its net earnings in the preceding four fiscal years. This is an approach that is often applied in valuations of highly cyclical businesses, whose annual financial results in a single year (e.g. during a recession or an economic boom) may not be representative for its long-term value-generation capability.
- **Forward multiples**, where a current business value is divided by a forecasted (expected) value of a given denominator. For example, a forward EV/EBITDA multiple on January 31, 2018, could be computed by dividing an investigated company's enterprise value as at the end of January, 2018, by its forecasted EBITDA for the entire 2018 (or even later periods). An advantage of this approach lies in its prospective orientation, which is legitimate on a ground that the future (instead of the past) economic benefits and cash flows are relevant for investors. However, its main drawback lies in its sensitivity to subjective judgments that are embedded in any economic forecasts (particularly with long-term horizons).

It must be noted that all valuation multiples should be used with care, particularly when they are applied to compare relative market values of two or more "peers" (e.g. in search of overvalued and undervalued stocks). A company with relatively low values of multiples does not have to be undervalued. Likewise, the above-average multiples do not necessarily imply a stock overpricing. This is so because the observed differences between the values of valuation multiples of individual (even seemingly very similar) enterprises may be entirely legitimate and may stem from one or more of the following factors (Revsine et al., 2002):

- **Risk differences**—Two firms with the same levels of their current and expected future earnings may have different stock prices (and different valuation multiples) because of differences in an uncertainty associated with those expected future earnings (and the more/less unpredictable a given firm's earnings, the lower/higher its valuation multiples, as compared to its "peers").
- **Growth opportunities**—Two businesses with the same levels of their current earnings and comparable levels of their business risks may have different valuation multiples if their perceived (by market participants) future growth prospects differ materially (and the faster/slower the expected growth of a given firm's

future earnings, the higher/lower its valuation multiples, as compared to its “peers”).

• **Permanent, transitory and valuation-irrelevant components of earnings—**

Reported corporate earnings and net assets may consist of three distinctly different components (before the accounting quality issues are taken into consideration), each with a different impact on corporate market values:

- *Permanent earnings*, that are expected to be sustainable and value-relevant (e.g. a profit on sales or an operating profit adjusted for non-recurring items of other operating income and other operating expenses).
- *Transitory earnings*, that are value-relevant but are not expected to persist into the future (e.g. one-off cash gains or losses from currency rate movements, extraordinary losses from legal litigations or one-off restructuring charges resulting from a shut-down of one of a given company’s factories).
- *Value-irrelevant items*, that affect reported profits or net assets but do not imply any future cash flows (e.g. one-off adjustments to shareholders’ equity due to changes in accounting principles or due to prior accounting errors).

Permanent (sustainable) earnings should imply higher multiples than transitory earnings, since the former may be expected to persist longer into the future. Likewise, transitory earnings should have higher multiples than value-irrelevant items, since the latter have no cash flow-generation capability. Consequently, the higher/lower is a contribution of permanent earnings into a given firm’s total reported income, the higher/lower will be its valuation multiples, as compared to its “peers”.

• **Quality (reliability) of reported financial statements—**Reported financial results may consist of two broad components, each with a different impact on corporate market values:

- *“True” (reliable) results* that are expected to be sustainable and value-relevant (in the same way as permanent earnings).
- *Fictitious (manipulated) results*, that stem from an application of aggressive or “creative” accounting techniques and should be treated as value-irrelevant. Obviously, “true” earnings deserve higher valuation multiples than any fabricated numbers (that do not deserve any positive multiples at all). This is because any manipulated results have no cash flow-generating capability and must reverse sooner or later. Consequently, the higher/lower is a perceived (by market participants) contribution of aggressive accounting techniques into a given firm’s total reported results, the lower/higher will be its valuation multiples. However, this “penalty effect” (i.e. relatively low valuation multiples due to market’s doubts about a reliability and sustainability of a given company’s financial results) will be observed only in those cases where market participants are able to detect the accounting irregularities on a timely basis. When a manipulating firm is “clever” enough to convince the markets that its reported financial results are “true” and reliable, then it may be temporarily quoted with an inflated stock price and overstated valuation multiples (with a negative earnings surprise and a sudden downward stock price adjustment, in the following periods). Thus, a rigorous and thorough evaluation of a reliability of reported

corporate financial results, discussed with details in other books (Welc, 2020), constitutes an integral part of a comprehensive financial statement analysis and should never be neglected.

Let's now investigate the valuation multiples of Volkswagen Group, as at the end of fiscal year 2008. Table 3.16 contains computations of the market value of equity, net debt, non-controlling (minority) interests and enterprise value of Volkswagen Group, as at the end of 2007 and 2008. Table 3.17, in turn, presents the company's valuation multiples, as at the end of both periods.

As may be seen in Table 3.17, the values of all ten multiples of Volkswagen Group rose significantly between the end of 2007 and the end of 2008. For every 1.0 EUR of the company's consolidated sales revenues, generated in 2008, stock market investors were willing to pay 88 cents (with a P/S multiple of 0.88), while a year earlier they were accepting 57 cents, for every 1.0 EUR of sales (with the P/S ratio of 0.57). The value of the P/E ratio, of 21.34, means that at the end of 2008, investors were ready to pay 21.34 EUR for each 1.0 EUR of consolidated net earnings, reported by the company for 2008 (while a year earlier the market price of 1.0 EUR of the VW's annual earnings amounted to about 15.0 EUR). The value of the P/BV multiple of 2.68 (as at the end of 2008), in turn, means that the market value of business operations of the entire Volkswagen Group exceeded a book value of the company's consolidated net assets (that is the same as a book value of its shareholders' equity) by as much as 168% (while a year earlier each 1.0 EUR invested in the company's net assets had a market value of 1.94 EUR,

Table 3.16 Market value of equity, net debt, non-controlling interests and enterprise value (EV) of Volkswagen Group, as at the end of fiscal years 2007 and 2008

Item	2007 ^a	2008 ^a	Source
Number of shares outstanding (million)	396.6	400.2	Page 238 of the VW's annual report for 2008
Stock price at December 31 (in EUR)	156.05	250.00	Page 125 of the VW's annual report for 2008
Market value of equity (EUR million)	61,889	100,050	= No. of shares × stock price
Noncurrent financial liabilities (NFL)	29,315	33,257	Table 1.7
Current financial liabilities (CFL)	28,677	36,123	Table 1.7
Marketable securities (MS)	6,615	3,770	Table 1.6
Cash and cash equivalents (CaCE)	10,112	9,474	Table 1.6
Net debt (EUR million)	41,265	56,136	= NFL + CFL – MS – CaCE
Non-controlling (minority) interests	63	2,377	Table 1.9
Enterprise value (EUR million)	103,217	158,563	= Market value of equity + Net debt + Non-controlling interests

^aFor balance sheet data, the year-end balances have been used

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

Table 3.17 Valuation multiples of Volkswagen Group, as at the end of fiscal years 2007 and 2008

Multiple	Formula applied (items labeled as in the VW's annual report for 2008) ^b	2007	2008
P/S	Market value of equity/ Sales revenue	0.57 = 61,889/108,897	0.88 = 100,050/113,808
EV/S	Enterprise value/ Sales revenue	0.95 = 103,217/108,897	1.39 = 158,563/113,808
P/EBITDA ^a	Market value of equity/ EBITDA	4.07 = 61,889/15,209	6.79 = 100,050/14,739
EV/EBITDA ^a	Enterprise value/ EBITDA	6.79 = 103,217/15,209	10.76 = 158,563/14,739
P/EBIT	Market value of equity/ Operating profit	10.06 = 61,889/6,151	15.80 = 100,050/6,333
EV/EBIT	Enterprise value/ Operating profit	16.78 = 103,217/6,151	25.04 = 158,563/6,333
P/E	Market value of equity/ Profit after tax	15.01 = 61,889/4,122	21.34 = 100,050/4,688
P/BV	Market value of equity/ Equity	1.94 = 61,889/31,938	2.68 = 100,050/37,388
P/OCF	Market value of equity/ Cash flows from operating activities	3.95 = 61,889/15,662	9.26 = 100,050/10,799
EV/OCF	Enterprise value/ Cash flows from operating activities	6.59 = 103,217/15,662	14.68 = 158,563/10,799

^aData on depreciation and amortization are extracted from the VW's consolidated cash flow statement: Depreciation and amortization expense (5,191 and 5,435 in 2008 and 2007, respectively), Amortization of capitalized development costs (1,392 and 1,843 in 2008 and 2007, respectively), Depreciation of leasing and rental assets and investment property (1,823 and 1,780 in 2008 and 2007, respectively)

^bMarket values of equity and enterprise values (as at the end of 2007 and 2008) computed and presented in Table 3.16

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

with the P/BV ratio of 1.94). All this means that during its fiscal year 2008 the Volkswagen Group's market value rose significantly not only in absolute terms (from 61.9 EUR billion to 100.1 EUR billion, according to data presented in Table 3.16), but also on a relative basis, i.e. as compared to the company's reported revenues, profits and net assets. However, an assessment of a reasonableness of such an appreciation of the company's absolute and relative market values may be done only on a comparative basis, i.e. by comparing its multiples with those observed for its "peers".

Table 3.18 presents values of selected valuation multiples of Volkswagen Group and its two main German rivals (BMW and Daimler), as at the end of fiscal year 2008. For a simplicity of computations, only equity-based multiples are compared

Table 3.18 Selected valuation multiples of major German car manufacturers, as at the end of fiscal year 2008

Company	P/S	P/EBITDA	P/E	P/BV	P/OCF	Stock price change in 2009
BMW	0.24	1.15	39.42	0.64	1.20	47.2%
Daimler	0.27	2.22	18.21	0.79	8.04	394%
Average for “peers”	0.26	1.69	28.82	0.72	4.62	–
Volkswagen Group	0.88	6.79	21.34	2.68	9.26	−69.2%

Source Annual reports of individual companies for fiscal years 2008–2009 and authorial computations

and interpreted here. The following conclusions may be inferred from reading the contents of Table 3.18:

- At the end of 2008, four out of five valuation multiples of Volkswagen Group had values that were several times higher than their respective averages, computed for both German “peers”. The only exception was the P/E multiple, in which case the Volkswagen Group’s ratio lied below the mean for BMW and Daimler.
- The income-based multiples (P/EBITDA and P/E), as well as the cash flow-based one (P/OCF), all showed very wide inter-company variations, that eroded an inter-company comparability of their values. This stems from a relatively high volatility of corporate profits and cash flows (particularly around turning points of global business cycles, like in 2008) and constitutes one of the major weaknesses of the income-based and cash flow-based multiples. In contrast, the P/S and P/BV ratios tend to stay more (but not entirely) stable and comparable between firms, even in turbulent times. Consequently, given an economic environment of a car industry at the turn of 2008, in the following analysis only the P/S and P/BV ratios (whose averages presented in Table 3.18 seem more reliable) will be interpreted.
- In the case of both P/S and P/BV multiples, distances between the numbers computed for Volkswagen Group and those obtained for its German competitors seem quite weird and call for a skepticism. For example, it seems suspicious that the real (fair) market value of 1.0 EUR of the VW’s revenues was as high as 88 cents (with the VW’s P/S of 0.88), while at the same time stock investors were willing to pay no more than about 26 cents for annual revenues generated by both “peers”. Likewise, it seems unlikely that 1.0 EUR tied up in the VW’s net assets was worth as much as 2.68 EUR (with the company’s P/BV of 2.68), while the net assets held by both BMW and Daimler had market values that fell below their carrying amounts (with their P/BV ratios deeply below unity). Volkswagen Group was not featured by that much better growth prospects or that much lower investment risks (or both), as compared to BMW and Daimler,

to justify such a huge market valuation premium (as was observed in its valuation multiples at the end of 2008). Consequently, the data presented in Table 3.18 suggest that the VW's shares could have been significantly overpriced (overvalued) at the end of 2008.

- A supposition of the overpricing of the VW's shares, as at the end of 2008, was confirmed by its stock price behavior in the following year. As may be seen in the last column of Table 3.18, between the end of 2008 and the end of 2009, the market price of one share of Volkswagen Group fell by as much as 69.2%. In contrast, within the same timeframe the BMW's and Daimler's share prices appreciated by as much as 47.2 and 39.4%, respectively. The shares of all three examined car manufacturers are listed on the same stock exchange, which means that such striking discrepancies, between their stock returns in 2009, cannot be explained by market-specific factors. In contrast, there must have been some company-specific issues.
- A plausible answer to a question about likely causes of such a sky-high market valuation of the Volkswagen Group's shares, at the end of 2008, may be found in its annual report for fiscal year 2008, where on page 124 (section "Shares and Bonds" of the Management Report) the company informed that in the fourth quarter of that year "*Porsche Automobil Holding SE announced that it had increased its interest in Volkswagen AG to 42,6% [...] and that it held cash-settled options on ordinary shares of Volkswagen [...]*". In the following sentence the VW's management informed that "*many market players were surprised by this announcement*" and pushed the price of Volkswagen's shares to EUR 1,005.01 for a short period, which meant that "*at this time, Volkswagen was the most valuable company in the world*". This fact, combined with a deep fall of the VW's stock price in 2009, means that the price of its one share, observed at the end of 2008 (i.e. 250.00 EUR, according to the data shown in Table 3.16), was still significantly inflated by the market's speculations about a possible takeover of Volkswagen Group by Porsche. That speculation, in turn, was manifested in the above-average values of majority of the VW's valuation multiples, as at the end of fiscal year 2008.

Table 3.19 presents a simplified comparative (relative) valuation of fair value of the Volkswagen Group's shareholders' equity (as at the end of 2008), by means of the P/S and P/BV multiples of its two German rivals. According to the data presented in Table 3.18, the average values of the P/S and P/BV ratios, for BMW and Daimler, equaled 0.26 and 0.72, respectively. In fiscal year 2008 the VW's revenues and shareholders' equity amounted to 113,808 EUR million and 37,388 EUR million, respectively. Assuming that the average values of the P/S and P/BV metrics were applicable to Volkswagen Group as well, the P/S-based valuation of the fair value of the VW's equity equaled 29,590 EUR million [= 0.26 × 113,808], while its P/BV-based estimate amounted to 26,919 EUR million [= 0.72 × 37,388]. An arithmetic mean of these two numbers, which assumes that both applied multiples are equally informative and reliable and deserve equal

Table 3.19 Simplified comparative (relative) valuation of fair value of the Volkswagen Group's shareholders' equity, as at the end of fiscal year 2008

	Valuation multiple	
	P/S	P/BV
Average for BMW and Daimler ^a	0.26	0.72
Volkswagen Group's data for 2008 (in EUR million)	Sales revenues: 113,808	Shareholders' equity: 37,388
Fair value of the VW's equity, as at the end of 2008 (in EUR million)	29,590 ^b	26,919 ^c
Arithmetic mean of the two estimates (i.e. fair value of the VW's equity)	28,255 EUR million	
Actual market value of the VW's equity, as at the end of 2008 (in EUR million) ^d	100,050 EUR million	
Downside potential (expected fall) of the VW's market value to fair value	-71.8%	

^aAccording to the data shown in Table 3.18

^bAverage P/S for “peers” (0.26) × Volkswagen Group’s sales revenues in 2008 (113,808)

^cAverage P/BV for “peers” (0.72) × Volkswagen Group’s equity at the end of 2008 (37,388)

^dAccording to the data shown in Table 3.16

Source Annual reports of individual companies for fiscal years 2008–2009 and authorial computations

weights, amounts to 28,255 EUR million. This reflects an estimated real value (i.e. the value justified by the industry’s and company’s fundamentals) of the VW’s equity. However, at the end of 2008 the company’s actual market capitalization amounted to 100,050 EUR million, that implied a likely overvaluation, by as much as 71,795 EUR million [= 100,050 – 28,255]. If the company’s business was overpriced, then its market capitalization should have reversed toward its fair value sooner or later. In the VW’s case, it suggested a likely (as at the end of 2008) erosion of the market value of the company’s equity, by as much as 71.8% (i.e. from 100,050 EUR million down to about 28,255 EUR million).

As may be seen in Table 3.18, in 2009 the market capitalization of Volkswagen Group plummeted by as much as 69.2%. This means that despite its simplicity, our valuation of the fair value of the VW’s equity (that suggested a downside potential of 71.8%) was quite accurate. In reality, however, it is quite rare for any financial statement ratios to be that precise. Nevertheless, the VW’s example seems to confirm a general usefulness of valuation ratios in a financial statement analysis (provided that they are not applied mechanically and provided that all relevant distorting factors are taken into consideration).

3.7 Multivariable Credit Risk Models

All analytical tools discussed so far were based on individual indicators of a corporate financial performance. Although it has been emphasized repeatedly that a thorough, diligent and reliable financial statement scrutiny requires investigating various metrics of profitability, financial risk, turnover and cash flows in a combination (instead of an isolation), the individual ratios were computed on a stand-alone basis. However, there exist techniques of a multi-variable financial analysis that are particularly useful in a credit risk evaluation (e.g. bankruptcy prediction). They are based on statistical models in which several financial indicators are examined at the same time.

A plethora of such statistical models of a corporate credit risk evaluation may be found in a finance literature. However, this section is not aimed at offering an exhaustive review of state of the art in that regard. Instead, its goal is to demonstrate how such analytical tools are applied in practice. Accordingly, only selected broadly recognized (and applied worldwide) statistical models for a credit risk quantification will be presented in this section.

The most globally recognized bankruptcy prediction model is the Z-score model, constructed and published by E. I. Altman (Altman, 1968). Despite its age, the Altman's original model (that was updated several times later on) seems to be the most commonly applied one. Its practical application boils down to a computation and interpretation of the Z-score metric, based on five financial statement ratios, as follows:

$$\text{Z-score (Altman 1)} = 1.2 \times X_1 + 1.4 \times X_2 + 3.3 \times X_3 + 0.6 \times X_4 + 1.0 \times X_5$$

where:

- X1 Working capital/Total assets,
- X2 Retained earnings/Total assets,
- X3 Operating profit (EBIT)/Total assets,
- X4 Market value of shareholders' equity/Book value of debt,
- X5 Sales revenues/Total assets.

As may be seen, the Z-score is obtained as a mix of ratios of profitability (X3), indebtedness (X2 and X4), liquidity (X1) and turnover (X5). If its value computed for a given enterprise lies above 2.99, then it may be deemed "healthy" (i.e. not exposed to a significant danger of a bankruptcy in a foreseeable future). In contrast, the Z-score's value below 1.81 calls for classifying a given firm as "almost bankrupt" (i.e. burdened by a high probability of falling into insolvency in the near future). A range of Z-score between 1.81 and 2.99 constitutes a "gray area", where no clear-cut conclusions, about the bankruptcy risk of a given business, should be inferred.

The Altman's original model has been updated several times (including its industry-specific versions). One of its younger versions looks as follows (Altman, 2002):

$$\text{Z-score (Altman 2)} = 6.56 \times X_1 + 3.26 \times X_2 + 6.72 \times X_3 + 1.05 \times X_4$$

where:

- X1 Working capital/Total assets,
- X2 Retained earnings/Total assets,
- X3 Operating profit (EBIT)/Total assets,
- X4 Book value of shareholders' equity/Book value of net debt.

It is worth noting that a market value of equity no longer constitutes an input here. Instead, a book value of equity is used as a numerator in the X4 variable. This makes this revised version of the model more universal, since it may be applied for both public companies (i.e. listed on stock exchanges) as well as for private businesses (so-called closely held firms).

In this revised model, the values of Z-score above 2.6 and below 1.1 suggest a low and high bankruptcy risk, respectively, while any value in-between (i.e. within a range between 1.1 and 2.6) should be deemed inconclusive.

The other renowned and widely applied corporate bankruptcy prediction model looks as follows (Taffler, 1984):

$$\text{Z-score (Taffler)} = 3.20 + 12.18 \times X_1 + 2.50 \times X_2 - 10.68 \times X_3 + 0.03 \times X_4$$

where:

- X1 Profit before tax/Current liabilities,
- X2 Current assets/Total liabilities,
- X3 Current liabilities/Total assets,
- X4 [(Current assets – Inventory – Prepaid expenses – Current liabilities)/(Operating expenses – Depreciation and amortization)] × 365.

This model suggests a low and high risk of corporate bankruptcy when the obtained Z-score lies above and below zero, respectively. Thus, it does not include any "gray area".

Another interesting model has been published relatively recently by K. G. Palepu, P. M. Healy and E. Peek (Palepu et al., 2013). It has been estimated on a sample of 262 European non-financial companies that were rated by Standard & Poor's (a credit rating agency) at least ones between March 2005 and March 2011. Unlike three bankruptcy prediction models discussed above, Palepu-Healy-Peek model does not forecast a corporate financial failure outright. Instead, its output

(i.e. an obtained PHP-score) is converted into a rating of a corporate debt. The model looks as follows:

$$\begin{aligned} \text{PHP-score} = & 2.697 + 0.519 \times X1 - 6.842 \times X2 + 4.909 \times X3 \\ & + 0.044 \times X4 - 0.765 \times X5 - 0.004 \times X6 \end{aligned}$$

where:

- X1 Natural logarithm of company's total assets (in EUR billions),
- X2 Standard deviation of return on business assets over last five years,
- X3 Return on business assets (Net earnings/Total assets),
- X4 Operating profit (EBIT)/Interest expense,
- X5 Debt to capital,
- X6 EBITDA to total debt.

As may be seen, the PHP-score is obtained as a blend of various metrics of an examined company's size (X1), its business risk as manifested in a volatility of its financial results (X2), its profitability (X3), indebtedness (X5) and debt-coverage ratios (X4 and X6). The PHP-score, computed for a given enterprise, should be converted into its credit rating as follows:

- PHP-score above 7.73 predicts AAA rating (a very sound company, with a negligible insolvency risk).
- Score between 5.88 and 7.73 predicts AA rating.
- Score between 4.21 and 5.88 predicts A rating.
- Score between 2.68 and 4.21 predicts BBB rating.
- Score between 1.36 and 2.68 predicts BB rating.
- Score between 0.00 and 1.36 predicts B rating.
- Score below zero predicts CCC rating (a company with a very high risk of its financial default in the near future).

The BBB constitutes the lowest investment grade, while all ratings below BBB are considered speculative.

Now let's evaluate a credit risk of Volkswagen Group, as at the end of fiscal years 2007 and 2008, by means of all four multivariate tools presented above. Let's begin with the oldest one, i.e. the Altman's original model published in 1968 (that will be labeled here as Altman-1). It includes five explanatory variables (ratios) that must be computed first and then entered into an equation. Table 3.20 contains financial data, extracted from the VW's annual report for fiscal year 2008, which are needed as inputs to those five ratios. Sales revenues, operating profit, working capital, total assets, retained earnings and book value of debt may be extracted directly from the company's primary financial statements (income statement and balance sheet), disclosed and discussed in Chapter 1. In contrast, a market value of equity (that is often labeled as market capitalization) must be calculated, as a product of number of the company's shares outstanding (as at the end of period)

Table 3.20 Financial data of Volkswagen Group needed to compute five explanatory variables of the Altman's original model (Altman-1)

Item (in EUR million)	2007 ^a	2008 ^a	Source of inputs
Sales revenues	108,897	113,808	Table 1.1
Operating profit	6,151	6,333	Table 1.1
Working capital (= Current assets – Current liabilities)	12,448	11,361	Tables 1.6 and 1.7
Total assets	145,357	167,919	Tables 1.5 and 1.6
Retained earnings	25,718	28,636	Table 1.9
Book value of debt	113,419	130,531	Table 1.7
Market value of equity =	61,889	100,050	No. of shares × stock price
Number of shares outstanding (million)	396.6	400.2	Page 238 of the VW's annual report for 2008
Stock price at December 31 (in EUR)	156.05	250.00	Page 125 of the VW's annual report for 2008

^aFor balance sheet data, the year-end balances have been used (for simplicity)

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

and a market price of its one share (on Frankfurt Stock Exchange), at the end of the last trading session of a given period. Both of those inputs may be found in the VW's annual report.

Table 3.21 displays parameters of the model, values of its individual explanatory variables obtained for Volkswagen Group and computation of the Z-score (Altman-1), as at the end of fiscal years 2007 and 2008.

As was stated before, the value of the Z-score (Altman-1) below 1.81 calls for classifying a given firm as bearing a high risk of its financial failure in the near future. As may be seen at the bottom of Table 3.21, at the end of both investigated periods the values of this synthetic metric of credit risk, computed for Volkswagen Group, fell below this critical threshold. This means that according to the original Altman's model, the company seemed "almost bankrupt" in those years. However, Volkswagen Group never filed for its bankruptcy, which means that an accuracy of the company's bankruptcy prediction, generated by the original Altman's model, was rather poor. An age of this tool (that was created as long ago as in late 1960s) seems to constitute the most likely reason for its poor performance in quantifying the Volkswagen Group's credit risk. Therefore, let's now check a forecasting accuracy of the Altman's updated model (Altman-2).

The Altman's updated model includes four explanatory variables, three of which (i.e. X1, X2 and X3) are exactly the same metrics as in the original model, although with different values of their coefficients. Assets turnover (i.e. sales revenues divided by total assets) is no longer present here. In the case of X4 variable, a book value of equity (instead of its market value) enters numerator, while the book value of net debt (defined here as a difference between total liabilities and liquid current assets) is used as denominator. Consequently, all new inputs that

Table 3.21 Computation of Z-score (Altman-1) for Volkswagen Group, as at the end of fiscal years 2007 and 2008

Symbol of variable	Formula for explanatory variable	Model parameters	Values of variables for Volkswagen Group	
			2007	2008
X1	Working capital/ Total assets	1.2	8.6% (= 12,448/145,357)	6.8% (= 11,361/167,919)
X2	Retained earnings/ Total assets	1.4	17.7% (= 25,718/145,357)	17.1% (= 28,636/167,919)
X3	Operating profit/ Total assets	3.3	4.2% (= 6,151/145,357)	3.8% (= 6,333/167,919)
X4	Market value of equity/ Book value of debt	0.6	0.55 (= 61,889/113,419)	0.77 (= 100,050/130,531)
X5	Sales revenues/ Total assets	1.0	0.75 (= 108,897/145,357)	0.68 (= 113,808/167,919)
Z-score (Altman-1)			1.57^a	1.59^b

^a = (1.2 × 8.6%) + (1.4 × 17.7%) + (3.3 × 4.2%) + (0.6 × 0.55) + (1.0 × 0.75)

^b = (1.2 × 6.8%) + (1.4 × 17.1%) + (3.3 × 3.8%) + (0.6 × 0.77) + (1.0 × 0.68)

Source Authorial computations based on data presented in Table 3.20

Table 3.22 Financial data of Volkswagen Group (other than those presented in Table 3.20) needed to compute the explanatory variables of the Altman's updated model (Altman-2)

Item (in EUR million)	2007 ^a	2008 ^a	Source of inputs
Book value of equity	31,938	37,388	Table 1.9
Book value of net debt (Total liabilities less liquid current assets)	96,692 ^b	117,287 ^c	Tables 1.6 and 1.7

^aThe year-end balances have been used

^b = Noncurrent liabilities (57,351) + Current liabilities (56,068) – Marketable securities (6,615)
– Cash and cash equivalents (10,112)

^c = Noncurrent liabilities (65,729) + Current liabilities (64,802) – Marketable securities (3,770)
– Cash and cash equivalents (9,474)

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

are needed, as compared to the Altman's original model, include book values of the VW's shareholders' equity and book values of its net debt (for which a sum of marketable securities and cash and cash equivalents represents liquid current assets). All other numbers are the same as those used before and presented in Table 3.20. Accordingly, only the new inputs are presented in Table 3.22.

Table 3.23 presents parameters of the Altman's updated model, values of its individual explanatory variables obtained for Volkswagen Group and computation of the Z-score (Altman-2), as at the end of fiscal years 2007 and 2008. As stated before, in the Altman's revised model the Z-score's values above 2.6 and below 1.1

Table 3.23 Computation of Z-score (Altman-2) for Volkswagen Group, as at the end of fiscal years 2007 and 2008

Symbol of variable	Formula for explanatory variable	Model parameters	Values of variables for Volkswagen Group	
			2007	2008
X1	Working capital/ Total assets	6.56	8.6% (= 12,448/145,357)	6.8% (= 11,361/167,919)
X2	Retained earnings/ Total assets	3.26	17.7% (= 25,718/145,357)	17.1% (= 28,636/167,919)
X3	Operating profit/ Total assets	6.72	4.2% (= 6,151/145,357)	3.8% (= 6,333/167,919)
X4	Book value of equity/ Book value of net debt	1.05	0.33 (= 31,938/96,692)	0.32 (= 37,388/117,287)
Z-score (Altman-2)			1.77^a	1.59^b

^a= $(6.56 \times 8.6\%) + (3.26 \times 17.7\%) + (6.72 \times 4.2\%) + (1.05 \times 0.33)$

^b= $(6.56 \times 6.8\%) + (3.26 \times 17.1\%) + (6.72 \times 3.8\%) + (1.05 \times 0.32)$

Source Authorial computations based on data presented in Tables 3.20 and 3.22

suggest a low and high bankruptcy risk, respectively, while any value in-between should be deemed inconclusive. As may be concluded from the bottom of Table 3.23, at the end of both examined years the VW's Z-score (Altman-2) fell into the "gray area" (i.e. into a range between 1.1 and 2.6). Accordingly, even though the company should not have been treated as "almost bankrupt", some non-negligible financial risks did exist. It is worth noting that a negative trend (i.e. a falling value of the Z-score) could have been observed. Furthermore, at the end of 2008 the Z-score (Altman-2) lied closer to a lower bound of the inconclusive zone.

Let's now assess the VW's bankruptcy risk with the use of the Taffler's model. This tool includes four explanatory variables and an intercept (that was absent in both Altman's models). Table 3.24 discloses financial data (extracted from the VW's annual report for fiscal year 2008) that are needed as inputs to the Taffler's model. One of the inputs in the X4 variable is operating expenses, i.e. an item that is not disclosed separately on the VW's income statement. Consequently, a sum of cost of sales, distribution expenses and administrative expenses has been treated as a proxy for the operating expenses. Similarly as earlier in the chapter, the VW's total depreciation and amortization constitutes a sum of its depreciation and amortization expense, amortization of capitalized development costs and depreciation of leasing and rental assets and investment property (which are all reported as separate line items on the VW's cash flow statement).

Table 3.25 presents parameters of the Taffler's model, values of its individual explanatory variables obtained for Volkswagen Group and computation of the Z-score (Taffler) for the end of fiscal years 2007 and 2008. As stated before, the Taffler's equation suggests a low and high risk of a corporate bankruptcy when its Z-score's value lies above and below zero, respectively. At the end of both

Table 3.24 Financial data of Volkswagen Group needed to compute the explanatory variables of the Taffler's model

Item (in millions of EUR)	2007 ^a	2008 ^a	Source of inputs
Operating expenses	104,330	109,906	Table 1.1
Profit before tax	6,543	6,608	Table 1.1
Depreciation and amortization	9,058	8,406	Table 1.10
Current assets	68,516	76,163	Table 1.6
Inventory	14,031	17,816	Table 1.6
Prepaid expenses	0	0	Table 1.6
Total assets	145,357	167,919	Tables 1.5 and 1.6
Current liabilities	56,068	64,802	Table 1.7
Total liabilities	113,419	130,531	Table 1.7

^aFor balance sheet data, the year-end balances have been used

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

Table 3.25 Computation of Z-score (Taffler) for Volkswagen Group, as at the end of fiscal years 2007 and 2008

Symbol of variable	Formula for explanatory variable	Model parameters	Values of variables for Volkswagen Group	
			2007	2008
–	Intercept	3.20	–	–
X1	Profit before tax/ Current liabilities	12.18	11.7% = 6,543/56,068	10.2% = 6,608/64,802
X2	Current assets/ Total liabilities	2.50	0.60 = 68,516/113,419	0.58 = 76,163/130,531
X3	Current liabilities/ Total assets	–10.68	0.39 = 56,068/145,357	0.39 = 64,802/167,919
X4	$[(\text{Current assets} - \text{Inventory} - \text{Prepaid expenses} - \text{Current liabilities}) / (\text{Operating expenses} - \text{Depreciation and amortization})] \times 365$	0.03	–6.06 = [(68,516 – 14,031 – 0 – 56,068) / (104,330 – 9,058)] $\times 365$	–23.21 = [(76,163 – 17,816 – 0 – 64,802) / (109,906 – 8,406)] $\times 365$
Z-score (Taffler)			1.78^a	1.03^b

^a= 3.20 + (12.18 × 11.7%) + (2.50 × 0.60) – (10.68 × 0.39) + (0.03 × –6.06)

^b= 3.20 + (12.18 × 10.2%) + (2.50 × 0.58) – (10.68 × 0.39) + (0.03 × –23.21)

Source Authorial computations based on data presented in Table 3.24

2007 and 2008, the Z-score (Taffler) metric of Volkswagen Group stood positive, which implied a remote possibility of the company's insolvency at that time. However, the value of this composite indicator of the company's credit risk fell sharply between the end of 2007 and the end of 2008, which could have constituted a non-negligible warning signal. Even though a positive (and significantly above zero) Z-score's value did not generate a "red flag", its evidently negative

Table 3.26 Estimation of standard deviations of return on Volkswagen Group's assets in two five-year periods (i.e. fiscal years 2003–2007 and 2004–2008)

Period	Net earnings (in EUR million)	Total assets ^a (in EUR million)	ROA ^b (%)	Source of inputs
2003	–	–	2.0	Page 73 of Volkswagen Group Annual Report 2006
2004	–	–	1.3	
2005	–	–	2.4	
2006	–	–	2.0	
2007	4,122	145,357	2.8	
2008	4,688	167,919	2.8	Tables 1.1, 1.5, 1.6
Standard deviation of return 2003–2007				
Standard deviation of return 2004–2008				0.56%
				0.63%

^aThe year-end balances have been used

^bNet earnings divided by total assets

Source Annual reports of Volkswagen Group for fiscal years 2006–2008 and authorial computations

trend should have been deemed a “yellow flag” (meaning that a possible continuation of that observed tendency, in the medium-run, could have pushed Volkswagen Group into a high-risk territory). In such circumstances, some credit rating agencies would have probably described the VW’s debt rating as “stable with a negative perspective”.

Finally, let’s estimate the VW’s credit rating with the use of the Palepu-Healy-Peek (PHP) model. This tool includes an intercept and six explanatory variables, of which one seems quite unique (in a sense that it is absent in the remaining three models discussed in this section) and calls for some statistical computations. This is the standard deviation of return in five annual periods preceding an investigated year (X2), where the return is defined as a quotient of net earnings to total assets. A computation of values of this variable is presented in Table 3.26. Before estimating standard deviations, a return on assets (ROA) in the individual annual periods must be calculated first. For each year between 2003 and 2006, the ROA’s numbers have been extracted from the VW’s annual report for 2006 (where several ratios, computed by the company itself, were disclosed on page 73). For the following two periods (i.e. 2007 and 2008) the ROA’s values have been computed, based on respective accounting numbers reported in the VW’s annual report for fiscal year 2008. As may be seen, the company’s return on assets stood quite stable between 2003 and 2008, with its estimated standard deviations of about 0.56–0.63 percentage points.

Table 3.27 includes the remaining inputs that are necessary to apply the PHP model.

Table 3.28 presents parameters of the Palepu-Healy-Peek model, values of its individual explanatory variables obtained for Volkswagen Group and computation

Table 3.27 Financial data of Volkswagen Group needed to compute the values of explanatory variables for the PHP model (other than those presented in Table 3.26)

Item (in EUR million)	2007 ^a	2008 ^a	Source of inputs
Operating profit	6,151	6,333	Table 1.1
Interest expense (Finance costs)	1,647	1,815	Table 1.1
Net earnings	4,122	4,688	Table 1.1
Depreciation and amortization	9,058	8,406	Table 1.10
Total assets (Total capital)	145,357	167,919	Tables 1.5 and 1.6
Total liabilities	113,419	130,531	Table 1.7

^aFor balance sheet data, the year-end balances have been used

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

Table 3.28 Computation of Z-score (PHP) for Volkswagen Group, as at the end of fiscal years 2007 and 2008

Symbol of variable	Formula for explanatory variable	Model parameters	Values of variables for Volkswagen Group	
			2007	2008
–	Intercept	2.697	–	–
X1	Natural logarithm of company's assets (in EUR billion)	0.519	4.98 = ln (145,357/1,000)	5.12 = ln (167,919/1,000)
X2	Standard deviation of return	–6.842	0.56% (from Table 3.26)	0.63% (from Table 3.26)
X3	Return (Net earnings/Total assets)	4.909	2.8% = 4,122/145,357	2.8% = 4,688/167,919
X4	Operating profit/Interest expense	0.044	3.73 = 6,151/1,647	3.49 = 6,333/1,815
X5	Debt to capital	–0.765	78.0% = 113,419/145,357	77.7% = 130,531/167,919
X6	EBITDA to total debt	–0.004	13.4% = (6,151 + 9,058)/113,419	11.3% = (6,333 + 8,406)/130,531
Z-score (PHP)			4.95^a	5.01^b

$$^a = 2.697 + (0.519 \times 4.98) - (6.842 \times 0.56\%) + (4.909 \times 2.8\%) + (0.044 \times 3.73) - (0.765 \times 78.0\%) - (0.004 \times 13.4\%)$$

$$^b = 2.697 + (0.519 \times 5.12) - (6.842 \times 0.63\%) + (4.909 \times 2.8\%) + (0.044 \times 3.49) - (0.765 \times 77.7\%) - (0.004 \times 11.3\%)$$

Source Authorial computations based on data presented in Tables 3.26 and 3.27

Table 3.29 Credit ratings of Volkswagen AG, Volkswagen Financial Services AG and Volkswagen Bank GmbH issued in fiscal years 2007–2009 by rating agency Standard & Poor's

	Volkswagen AG		
	2007	2008	2009
Short-term	A-2	A-2	A-2
Long-term	A-	A-	A-
Outlook	Stable	Stable	Negative
	Volkswagen Financial Services AG		
	2007	2008	2009
Short-term	A-2	A-2	A-2
Long-term	A-	A-	A-
Outlook	Stable	Stable	Negative
	Volkswagen Bank GmbH		
	2007	2008	2009
Short-term	A-1	A-1	A-2
Long-term	A	A	A-
Outlook	Stable	Negative	Negative

Source Annual report of Volkswagen Group for fiscal year 2008

of the Z-score (PHP) metric, as at the end of fiscal years 2007 and 2008. As may be seen, in both investigated periods the values of the VW's Z-score (PHP) stood near 5.00 (within a narrow range). According to the ranges presented before, any Z-score (PHP) value between 4.21 and 5.88 predicts "A" rating, which suggests that debts owed by the company, at the end of both 2007 and 2008, could have been rated as "A".

Table 3.29 contains an extract from page 143 of the Volkswagen Group's Annual Report for fiscal year 2009. Between 2007 and 2009, two global credit rating agencies, namely Standard & Poor's and Moody's Investors Service, rated debts owed by the company. However, only credit ratings issued by the former one (referred further to as S&P) will be referenced below, since the Palepu-Healy-Peek model has been estimated on a dataset of firms rated by that particular agency. Accordingly, credit rating predictions implied by the Z-score (PHP) are coherent with a rating scale applied by S&P, but not necessarily with rating systems of other agencies.

As may be seen in Table 3.29, the S&P's credit ratings have been issued separately for Volkswagen AG (a parent company), Volkswagen Financial Services AG and Volkswagen Bank GmbH, instead of Volkswagen Group as a whole. During the three years under investigation, the debts owed by all three members of Volkswagen Group were rated as "A" (with additional sub-categories used within "A" class, such as "A-2" or "A-1"). This means that credit rating predictions, generated by the Palepu-Healy-Peek model for Volkswagen Group, were accurate in

Table 3.30 Definitions of “AA”, “A” and “BBB” credit rating classes, according to a rating agency Standard & Poor’s

Rating class	Definition
AA	An obligation rated “AA” differs from the highest-rated obligations only to a small degree. The obligor’s capacity to meet its financial commitments on the obligation is very strong
A	An obligation rated “A” is somewhat more susceptible to the adverse effects of changes in circumstances and economic conditions than obligations in higher-rated categories. However, the obligor’s capacity to meet its financial commitments on the obligation is still strong
BBB	An obligation rated “BBB” exhibits adequate protection parameters. However, adverse economic conditions or changing circumstances are more likely to weaken the obligor’s capacity to meet its financial commitments on the obligation

Source Standard & Poor’s website

both 2007 and 2008. It confirms the usefulness of the Palepu-Healy-Peek model in a financial statement analysis.

Table 3.30 quotes definitions of “AA”, “A” and “B” ratings, published on the S&P’s website.

It is worth noting that at the end of fiscal year 2008, Volkswagen Group had lower credit rating than Toyota Motor Company, whose long-term debts were rated by Standard & Poor’s as “AA”, as of May 31, 2009 (source: Annual Report of Toyota Motor Company for 2008). According to an information presented in Table 3.30, the Toyota’s financial strength in 2009 was deemed by Standard & Poor’s as “very strong”, while the VW’s capacity to meet its financial commitments were rated as “still strong”. The most likely reason for a better credit rating of the Japanese firm (as compared to its German rival) seems to lie in a combination of the former’s significantly higher margin on sales (12.7% vs. 3.4% of Volkswagen Group), lower indebtedness (63.4% as compared to 77.7%) and higher coverage of total liabilities by EBITDA (18.3% vs. 11.3% in case of Volkswagen Group).

It is worth noting that corporate credit ratings include not only an evaluation of a current status (creditworthiness) of a given firm’s debt but also an outlook (perspective) for a likely direction (i.e. an improvement or a deterioration) of a rating change in a foreseeable future. As may be seen in Table 3.29, in 2007 all three ratings issued by Standard & Poor’s for debts owed by entities belonging to Volkswagen Group had a “stable” outlook. However, a situation started changing in the following year and continued in 2009. As a result, at the end of 2009 the outlook for all three ratings was labeled as “negative”, which meant that a probability of rating downgrades in the future exceeded the probability of their upgrades. Those shifts in the Standard & Poor’s evaluation of the Volkswagen Group’s credit risk seem consistent with the findings of our prior assessment of a sustainability of the VW’s earnings reported for 2008, as well as with a deterioration of the company’s financial results that occurred in 2009.

3.8 Impact of Industry-Specific and Company-Specific Factors on Observed Values of Selected Financial Statement Ratios

It seems obvious that some industry-specific factors, as well as the company-specific ones, affect observed values of various financial statement ratios. Table 3.31 presents medians of several metrics among selected global industries, as at the end of 2014. For each of those twelve broadly defined industries, a median value of every ratio was calculated on the basis of six observations (i.e. selected individual firms that belong to a given industry).

The following conclusions may be inferred from data shown in Table 3.31:

- Industries differ noticeably in terms of their average margins earned. Businesses where markets are fragmented (i.e. where each player faces fierce competition from multiple rivals) and where firms offer commodity-like products or services (i.e. where it is difficult to differentiate from competitors), such as airlines, FMCG distributors or manufacturers of electronics, tend to have the lowest (below 5%) average operating margins. In contrast, capital-intensive industries with strong barriers to entry (e.g. pharmaceuticals or telecoms) or where more possibilities of differentiation exist (e.g. apparel stores or personal products) often enjoy higher (double-digit) operating profitability.
- A gap between EBITDA margin and operating profitability tends to be particularly wide in capital-intensive businesses that require large investments in specialized tangible fixed assets (with a resulting high share of depreciation charges in total operating expenses), such as airlines, manufacturing of cars and electronics, energy supplies or telecoms. In contrast, industries where manufacturing operations are rather simple (i.e. do not require large investments in very specialized assets) and may be outsourced to a large extent, such as manufacturing of apparel, food or personal products, tend to demonstrate smaller differences between EBITDA margin and operating profitability. Interestingly, a hotel industry, where huge part of the value-added comes from “brick-and-mortar” assets, such as real estate properties, is featured by utmost moderate distance between these two ratios. This was because numerous properties, where hotel services are rendered, are rented rather than owned (while until 2019 the rented noncurrent assets were treated as off-balance sheet ones, under both IFRS as well as U.S. GAAP).
- Capital-intensive businesses, where most of the value-added comes from specialized, expensive and long-lived assets, such as energy, pharmaceuticals and telecoms, tend to have lowest assets turnover ratios. In contrast, distributors of non-durable consumer goods, with no any relevant manufacturing operations (e.g. FMCG distributors) or with operations that are to a large extent outsourced (e.g. apparel stores or personal products), enjoy much faster turnover of assets.
- Some businesses that are exposed to multiple operating risks and turbulent economic environment (e.g. airlines or car manufacturers), tend to have above-average indebtedness and below-average liquidity. This means that their

Table 3.31 Median values of selected financial statement ratios^a within twelve selected industries (data for fiscal year 2014)

Industry	Firms included in the sample	Operating profitability (%)	EBITDA margin (%)	Net profitability (%)	Assets turnover	Indebtedness (%)	Current liquidity
Airlines	AirFrance-KLM, British Airways, Delta, Finnair, Lufthansa, Ryanair	4.3	9.9	0.9	0.93	84.1	0.75
Apparel stores	Adidas, Columbia, H&M, Hugo Boss, Inditex, Prada Group	17.2	21.2	13.0	1.18	34.1	1.87
Car manufacturers	BMW, Daimler, Honda, PSA Peugeot Citroen, Toyota, Volkswagen	6.8	13.8	5.6	0.63	75.1	1.05
Electronics	Apple, Hewlett-Packard, Panasonic, Philips, Samsung, Sony	4.6	10.1	3.2	0.84	65.5	1.12
Energy	E.ON, GDF Suez, Iberdrola, RWE, Tauron, Vattenfall	9.3	17.9	4.4	0.49	70.1	1.14
FMCG distributors	Ahold, Carrefour, Jeronimo Martins, SPAR, Tesco, WalMart	3.7	6.2	2.1	2.32	69.5	0.82
Food producers	Campbell Soups, Coca-Cola, Danone, Heineken, Kellogg, Nestle	13.2	17.8	9.4	0.68	64.9	0.74
Hotels	Accor, Crown Resorts, Hyatt, Intercontinental, Marriott, Starwood	13.7	20.1	9.3	0.64	69.1	0.88

(continued)

Table 3.31 (continued)

Industry	Firms included in the sample	Operating profitability (%)	EBITDA margin (%)	Net profitability (%)	Assets turnover	Indebtedness (%)	Current liquidity
Oil	BP, Chevron, Exxon Mobil, Lukoil, Shell, Statoil	10.2	15.3	3.6	1.16	49.7	1.35
Personal products	Avon, Colgate-Palmolive, Herbalife, L'Oréal, Procter & Gamble, Unilever	16.9	20.3	12.5	1.15	80.0	1.09
Pharmaceuticals	Astra Zeneca, Bayer, GlaxoSmithKline, Johnson & Johnson, Merck, Pfizer	15.6	25.4	11.3	0.51	62.1	1.51
Telecoms	Bell, Deutsche Telekom, Singtel, Swisscom, Telefonica, TeliaSonera	19.2	34.5	13.8	0.44	70.4	0.77
Medians for all twelve industries	11.7	17.8	7.4	76.0%	69.3	1.07	

^aFor ratios that include balance sheet data, year-end carrying amounts of individual items have been used as inputs

Source Annual reports of individual companies for fiscal year 2014 and authorial computations

increased operating risks are magnified (instead of being mitigated) by relatively high financial risks. In contrast, some relatively stable businesses (e.g. apparel stores or pharmaceuticals), that could safely afford a higher financial leverage, tend to have below-average indebtedness combined with above-average liquidity.

- Generally speaking, huge global corporations included in the sample tend to maintain their indebtedness ratios on levels slightly above their safety thresholds, commonly recommended by a corporate finance literature (about 60–66%), with a median indebtedness among all twelve industries of 69.3%. Likewise, they tend to keep their current liquidity ratio below its typically assumed lower safety thresholds (1.20–1.50, depending on a source), with a sample-wide median of 1.07. Five out of twelve industries (i.e. airlines, FMCG distributors, food producers, hotels and telecoms) have median current liquidity ratios deeply below unity. Despite it, none of the firms included in the sample filed for its bankruptcy in the course of the last ten years, which confirms that financial statement ratios should never be interpreted mechanically (and in isolation from other relevant information). Instead, all significant factors (including a size and global character of most firms investigated here, which facilitate their access to capital when needed) should always be taken into consideration.

The data presented in Table 3.31 illustrated an impact of some industry-specific factors on industry-wide average values of selected financial statement ratios. However, when analyzing and comparing various businesses, it must be kept in mind that company-specific factors may play an equally important role. Various business models and market strategies, adopted by individual firms, affect accounting ratios to the same extent as the inter-industry differences. Consequently, firms operating in the same industry (even direct competitors that occupy the same market segments) may show very different values of their accounting ratios. This will be illustrated with the data of three apparel companies (for 2014), disclosed in Table 3.32.

All three firms conduct their businesses in a broadly defined apparel industry. However, they implement different business models. While Prada Group follows a differentiation strategy in a high-fashion market niche, H&M and Inditex compete in a fast-fashion market segment. Accordingly, Prada Group targets wealthier (and perhaps more snobbish) customers who aspire to follow most recent fashion trends, while both H&M and Inditex attempt to attract younger and more laid-back buyers. As a result, average unit sales prices obtained by Prada exceed those charged for similar classes of goods by H&M and Inditex, with the former's gross margin on sales (almost 72%) exceeding that obtained by the latter ones (about 58–59%) by more than twelve percentage points. However, to follow its strategy successfully, Prada Group must locate its points of sale in much more prestigious and more expensive locations (e.g. along the most representative streets of world's biggest cities), while H&M and Inditex may operate in more typical shopping malls (where rental rates tend to be lower). Furthermore, while stores of H&M and Inditex may be densely “stuffed” with inventory, those operated under Prada brand must offer

Table 3.32 Selected accounting data and financial statement ratios of H&M, Inditex and Prada Group for fiscal year 2014

Data and ratios for 2014 ^a	H&M (SEK million)	Inditex (EUR million)	Prada Group (EUR million)
Revenues	151,419	18,117	3,552
Cost of goods sold (CoGS)	62,367	7,548	1,001
Operating profit	25,583	3,198	702
Total assets	75,597	15,377	4,739
Fixed operating assets	29,910	6,923	2,417
Inventories	19,403	1,860	655
Gross margin on sales = (Revenues – CoGS)/Revenues	58.8%	58.3%	71.8%
Operating profitability = Operating profit/Revenues	16.9%	17.7%	19.8%
Operating return on assets = Operating profit/Total assets	33.8%	20.8%	14.8%
Total assets turnover = Revenues/Total assets	2.00	1.18	0.75
Fixed operating assets turnover = Revenues/Fixed operating assets	5.06	2.62	1.47
Inventory turnover in cycles = CoGS/Inventory	3.21	4.06	1.53
Inventory turnover in days = (Inventory/CoGS) × 365 days	113.7	89.9	238.6

^aFor ratios that include balance sheet data, year-end carrying amounts of individual items have been used as inputs

Source Annual reports of individual companies for fiscal year 2014 and authorial computations

more customer's comfort and space (between items of inventory), which implies not only higher rental costs per one square meter, but also per one item of in-store inventory. Last but not least, numerous Prada's points of sales are decorated and furnished with more expensive (as compared to both H&M and Inditex) items, in order to create a customer's "feeling of luxury". This means that Prada's evident outperformance, in terms of the gross margin on sales, is to a large extent (but not entirely) eroded by its materially higher indirect operating expenses (overheads). This, in turn, results in a much narrower distance (only 2–3 percentage points), between Prada on one side and H&M and Inditex on the other side, in terms of the operating profitability.

However, with its premium-level sales prices, Prada's turnover of inventory is also much slower (2–2.5 times longer), as compared to its mid-market counterparts. In 2014, it took almost 240 days, on average, for a money tied up in the Prada's inventory to be "freed" (when the inventory is sold). For comparison, the inventories held by H&M and Inditex turned over with a much faster pace of about 114 and 90 days, respectively. This, in turn, translated into Prada's much slower

total assets turnover that made this Italian firm relatively “capital-intensive” (i.e. requiring much more funds invested in assets, in order to generate revenues and profits). Consequently, in 2014 Prada generated only 148 EUR of operating profit from each 1,000 EUR tied up in its total assets. In that regard, it underperformed both H&M and Inditex, whose operating returns on assets amounted to 33.8% and 20.8%, respectively.

As may be seen, blind inter-company comparisons of individual financial statement ratios, with no adequate attention paid to relevant differences in market segments targeted by individual firms, may be misleading. Prada Group has beaten both H&M and Inditex in terms of operating profitability (and particularly gross margin on sales), which however did not guarantee a better return on assets (due to the much slower turnover of inventory and total assets).

However, a comparative ratio analysis may be distorted not only by differing marketing strategies followed by individual firms, but also by inter-company differences in terms of operations management. Unlike Prada Group, both H&M and Inditex occupy the same market segment of a fast-fashion industry. Consequently, they offer quite similar types of apparel goods (with generally comparable prices), targeted at similar types of customers. However, their value-adding chains differ. While H&M outsources virtually all of its manufacturing operations to external suppliers, Inditex continues producing a material part of its apparel in its own facilities, located relatively close to its main distribution channels (i.e. in or near Europe). As a result, Inditex’s time-to-market, i.e. an average time interval from designing new collections through manufacturing to retail distribution, tends to be shorter than in the case of its rival (where the time needed for a transportation of goods from remote suppliers to points of sales is much longer, on average). Consequently, Inditex is able to react more flexibly to sudden shifts in demand, stemming either from fast-changing customer tastes or from weather factors (e.g. an unusually cold and long winter in Europe, calling for more supplies of warmer pullovers, hats and gloves and postponed introductions of new spring collections). In other words, Inditex is able to run relatively short production series and adjust the level and structure of its inventory as market conditions change. In contrast, its Swedish competitor must order its inventories with much longer advance and probably in larger volumes, which makes its reactions to ongoing market changes more sluggish. This means that at any time more money must be tied up in H&M’s inventory, as compared to its competitor, with resulting inventory turnover ratios (in days) of H&M and Inditex, of 113.7 and 89.9 days, respectively (with a difference of almost 24 days being to a large extent attributable to time spent by H&M’s inventory in transit). However, a faster turnover of inventory does not necessarily imply a faster turnover of total assets. Inditex, with its own manufacturing operations (where a significant part of its goods sold is manufactured), must maintain all necessary production lines, warehouses, transportation equipment and other related fixed operating assets. Thus, the company’s partial self-sufficiency, even though bringing a high flexibility in its inventory management (with a relatively short inventory turnover), results in significant amounts of money tied up in fixed operating assets. H&M, in contrast, appeared much “leaner” in that regard

and in 2014 enjoyed its fixed operating assets turnover of 5.06, i.e. almost twice as high as for its competitor (2.62). Consequently, Inditex's relatively fast inventory turnover was more than offset by its much slower turnover of fixed operating assets, with resulting H&M's and Inditex's total assets turnover ratios of 2.00 and 1.18, respectively. A final result is that in 2014, Inditex underperformed H&M in terms of the operating return on assets.

To conclude, in a rigorous comparative ratio analysis all relevant industry-specific and company-specific factors should be taken into consideration. As was demonstrated, values of individual metrics tend to differ not only between various industries, but also between those firms belonging to the same industry (even between direct competitors) that follow different marketing strategies or different approaches to operations management. Thus, the observed inter-company differences in values of individual ratios may be driven either by differences in a managerial performance or by differences in business models adopted (or both). Therefore, adequate care should be taken when applying a comparative ratio analysis in picking businesses that seem to be most successful or best managed.

3.9 Fundamental Relationships Between ROE and Its Drivers (DuPont Analysis)

As was stated in Sect. 3.2 of this chapter, **return on equity (ROE)** constitutes one of the most fundamental measures of investment returns, earned by a firm for its shareholders. However, it was also emphasized that the return on equity of any business should not be assessed in an isolation from its fundamental drivers. In particular, ROEs of various companies should not be compared mechanically, with an aim of picking a firm (or a group of firms) that is most successful in generating a high investment return for its owners. This is so because ROE constitutes a product of three fundamental factors, two of which (i.e. profitability of sales and assets turnover) have a predominantly operating nature, while the third one (a financial leverage) reflects a given company's financing policy (i.e. its capital structure). Accordingly, the return on equity may be boosted by either an improvement in the operating efficiency of a business (reflected in its higher margins or a better utilization of assets, or both) or by a corporate indebtedness (i.e. a share of liabilities within a capital structure). Generally speaking, any improvements in ROE that are driven by the operating factors are more welcome (and should be evaluated more positively) than its increases caused by a rising share of liabilities in funding corporate assets (with an exception of those businesses that were overly conservative before, i.e. which were featured by an evident overweight of shareholders' equity in the capital structure). A reason is that rising profitability and/or assets turnover often reflect a better management of a given company's expenses and assets (which, in turn, signals an improving competitive advantage and lowering operating risks), while a rising indebtedness boosts financial risks.

Deterministic relationships between the return on equity on one side, and its three fundamental drivers on the other side, are presented in Table 3.33. They

Table 3.33 Relationships between ROE and its three fundamental drivers (DuPont analysis)

Return on equity (ROE)	=	Net profitability	×	Assets turnover	×	Financial leverage
= Net earnings / Shareholders' equity		= Net earnings / Sales revenues		= Sales revenues / Total assets		= Total assets / Shareholders' equity
		Drivers of ROE that correspond to corporate operating efficiency (operating factors)				Driver of ROE that reflects corporate capital structure (financing factor)

Source Author

are known as **DuPont analysis**, named after DuPont chemical company, whose financial analysts are considered the first to develop a concept of breaking ROE into its operating and financing components (Higgins, 2000).

The return on equity constitutes a quotient of net earnings and shareholders' equity. As may be seen, it may be broken down mathematically into a product of net profitability (net earnings divided by net sales), assets turnover (sales revenues divided by total assets) and financial leverage (total assets divided by shareholders' equity). When multiplying net profitability and assets turnover, sales revenues (denominator of net profitability and numerator of assets turnover) cancel out. Likewise, when multiplying assets turnover by financial leverage, total assets (denominator of assets turnover and numerator of financial leverage) cancel out too. Consequently, multiplying net profitability, assets turnover and financial leverage, with all those cancellations of their numerators and denominators, boils down to the return on equity, that is a quotient of net earnings and shareholders' equity.

It is worth noting that formulas for ROE, net profitability and assets turnover are basically the same as discussed earlier in the chapter (in its Sects. 3.2 and 3.4). In contrast, a formula used for the financial leverage (i.e. total assets divided by shareholders' equity) is somewhat new. However, its economic substance is identical, even though it is computed and interpreted differently, to an indebtedness ratio (i.e. a quotient of total liabilities and total assets), discussed in Sect. 3.3. This is so because both metrics capture relative proportions of liabilities and shareholders' equity in a corporate capital structure. In case of the indebtedness ratio, the result reflects a share of total liabilities and provisions (i.e. all capital sources other than equity) in financing a given company's assets. Accordingly, the higher the share of debts (i.e. the lower the share of equity), the higher the indebtedness ratio. The financial leverage (as defined in Table 3.33), in turn, gauges by how many times corporate total assets exceed shareholders' equity. Thus, similarly as in the case of the indebtedness ratio, the higher the share of debt in the capital

structure, the higher the financial leverage ratio. Consequently, both ratios address the same issue and are scaled in the same direction (i.e. the lower the proportion of equity in the capital structure, the higher the indebtedness and financial leverage). In other words, the financial leverage constitutes an alternative way of expressing indebtedness.

A practical application of DuPont analysis will be demonstrated with the use of selected accounting numbers of three global car manufacturers. Table 3.34 presents a return on equity, as well as its underlying inputs, of Volkswagen Group, Honda Motor Company and Toyota Motor Company, for fiscal year 2008. For a simplicity, in all computations presented below the year-end carrying amounts (instead of averages across a period) of any balance sheet items will be used as inputs.

As may be seen, all three car manufacturers delivered double-digit returns on their respective shareholders' equities in 2008. Toyota Motor outperformed its two rivals, while Volkswagen Group lagged behind both Japanese competitors. However, the differences between all three values of ROE seem rather small, given that ROE is a short-term indicator that gauges a corporate performance in a single year only. Accordingly, it may be safely concluded that all three firms generated comparable rates of return for their shareholders in the investigated period. However, the DuPont analysis of the ROE's breakdowns enriches a picture significantly. Table 3.35 discloses the accounting inputs necessary to compute net profitability, assets turnover and financial leverage ratios, while Table 3.36 presents the breakdowns of ROE of individual firms into its three fundamental drivers.

The following conclusions may be inferred from an observation of Table 3.36:

Table 3.34 Return on equity of three global car manufacturers in fiscal year 2008

	Volkswagen Group (EUR millions)	Honda Motor (Yen billions)	Toyota Motor (Yen billions)
Net earnings	4,688	600	1,718
Shareholders' equity ^a	37,388	4,544	11,870
Return on equity (ROE)	12.5%	13.2%	14.5%

^aYear-end carrying amounts

Source Annual reports of individual companies for fiscal year 2008 and authorial computations

Table 3.35 Inputs (other than those disclosed in Table 3.34) necessary for a calculation of net profitability, assets turnover and financial leverage ratios of three global car manufacturers, in fiscal year 2008

	Volkswagen Group (EUR millions)	Honda Motor (Yen billions)	Toyota Motor (Yen billions)
Sales revenues	113,808	12,003	26,289
Total assets ^a	167,919	12,615	32,458

^aYear-end carrying amounts

Source Annual reports of individual companies for fiscal year 2008 and authorial computations

Table 3.36 Breakdown of ROE, earned by three global car manufacturers in fiscal year 2008, into its three fundamental drivers

Ratio ^a	Volkswagen Group	Honda Motor	Toyota Motor
Return on equity (ROE)	12.5%	13.2%	14.5%
	=	=	=
Net profitability	4.12%	5.00%	6.54%
	×	×	×
Assets turnover	0.678	0.951	0.810
	×	×	×
Financial leverage	4.491	2.776	2.734

^aAccording to the formulas presented in Table 3.33

Source Authorial computations based on data presented in Tables 3.34 and 3.35

- In 2008, Volkswagen Group's return on equity was slightly lower than that delivered by its two Japanese competitors.
- The company lagged behind its rivals in terms of both operating factors, i.e. its net profitability (that was lower than earned by Honda and Toyota by almost one percentage point and by more than 2.5 percentage points, respectively), as well as its assets turnover (that was lower by over 29% than in Honda's case and by about 16% as compared to Toyota).
- Consequently, a relatively high financial leverage of the German firm constituted a main factor responsible for a relatively narrow gap between the ROE delivered by Volkswagen Group and its both "peers".
- If all three car manufacturers kept identical indebtedness (i.e. an identical share of equity in funding total assets), then a distance of Volkswagen Group from its Asian competitors, in terms of the return on equity, would be much wider than observed.
- If in 2008 Volkswagen Group achieved its actual net profitability and its actual assets turnover (i.e. 4.12% and 0.678, respectively), but kept a lower financial leverage on the level comparable to both its "peers" (i.e. 2.7), then its ROE would equal only 7.5% [= 4.12% × 0.678 × 2.7], instead of 12.5% as observed. This means that the VW's ROE in fiscal year 2008 would be much lower than delivered by its investigated "peers" (in reality, however, it would not fall as deeply as to 7.5%, since with the lower financial leverage the company's financial expenses would fall as well, that in turn would boost net earnings and net profitability).
- To conclude, in fiscal year 2008 the Volkswagen Group's return on equity seemed commensurate with the ROEs delivered by its two Japanese rivals, but only due to the company's much riskier capital structure (i.e. its financial leverage). In terms of both operating factors (i.e. net profitability as well as assets turnover) Volkswagen Group underperformed its "peers", which means that its ROE was of a lower quality, since it was pushed up by the financial factors (instead of the operating ones).

As may be seen, an examination of the ROE's breakdown, by DuPont analysis, constitutes a very valuable and informative auxiliary tool of a financial statement analysis.

3.10 Most Important Pitfalls of a Financial Statement Analysis

Corporate financial statements constitute a very informative and useful source of an information about a state of business affairs of any enterprise. However, it must be kept in mind that they have multiple weaknesses that may erode a reliability and relevance of an accounting information, both for internal decision-makers (i.e. a given company's managers) as well as for external stakeholders (e.g. equity investors, creditors, suppliers, employees or other contractors). All techniques of a financial statement analysis, demonstrated in this chapter, are based on the accounting information disclosed in primary financial statements and notes to them. Consequently, all those analytical tools are vulnerable to pitfalls brought about by weaknesses of accounting systems. Therefore, any financial statement user should be aware of the most common traps of a financial statement analysis.

The following six factors may be pointed as the most important (although not the exclusive) weaknesses of corporate financial statements:

- **Financial statements disclose a historical information.** Most numbers disclosed in financial reports have a retrospective nature. Even though some expected future events are taken into account when financial statements are prepared (e.g. impairment write-downs of inventories to reflect expected negative trends in sales prices), most reported accounting numbers reflect consequences of past events only. This means that any accounting information (extracted from financial statements), as well as any analytical ratios discussed in this chapter (that are based on the accounting data), are always outdated to some extent. For instance, the annual report of Volkswagen Group for fiscal year 2008 presents the company's performance in 2007 (which was a period of a relatively fast growth of the global economy) as well as in 2008 (when an economic environment continued to be quite good in the first three quarters but deteriorated sharply in the fourth one). Thus, a deep slowdown of a global economy in 2009, that negatively affected an entire car industry, was only marginally reflected in the VW's financial results, reported in its annual report for 2008. Consequently, any financial statement user, who investigated the VW's annual report after it was published in 2009, had at his or her disposal the accounting numbers that were significantly outdated already.
- **Financial statements reflect only a prior monetary impact of economic events and transactions.** The accounting information published in financial statements captures only purely monetary aspects of corporate business activities. Consequently, qualitative consequences of multiple corporate activities do not

receive any direct and immediate representation in reported accounting numbers. For example, in order to incentivize its employees to work harder and more efficiently, a firm may increase their remuneration significantly. This will be immediately reflected in its boosted payroll costs and total operating expenses (with a resulting temporary erosion of its profits, as well as a “deterioration” of numerous accounting ratios), even though such a decision may have positive long-term effects and may boost future earnings (if only the employees’ increased motivation translates into their higher productivity and the firm’s higher future income).

- **None financial statement ratios should be treated as entirely reliable and trustful analytical tools, when used in an isolation from other relevant information (often of a qualitative nature).** Most metrics discussed in this chapter are interrelated and influenced by numerous factors that may significantly weaken their practical reliability. For instance, liquidity ratios (e.g. a current ratio) should be interpreted in a combination with inventory turnover and receivables turnover (Gray & Manson, 2011).
- **Accounting numbers are often sensitive to multiple subjective judgments.** One of common myths about an accounting (among non-accountants) is that accounting constitutes a kind of a strict science, in a sense that two or more accountants working independently on preparing financial statements of the same company (for the same period and on the basis of the same internal data and documents), should end up with identical financial statements, i.e. with identical amounts of revenues, profits, assets, liabilities, etc. In other words, numerous people believe that if only each of those two or more accountants work with an unbiased approach (i.e. with no intention to deliberately manipulate the reported numbers), then the final results of their work should not differ. A reality is just the opposite: there is a next-to-zero probability that two accountants, who work independently on financial statements of the same enterprise, will complete their work with reports that look exactly the same and disclose identical numbers. A main reason lies in a sizable load of subjective judgments and assumptions that must be taken in a process of a financial statement preparation. The areas of a financial reporting, where subjective judgments play a particularly important role, include (among others): depreciation and amortization of tangible and intangible fixed assets (whose expected useful lives must be estimated), reporting for inventory (where recoverable amounts are not always observable and must be estimated), reporting for receivable accounts (where an amount of bad debts must be estimated), reporting for provisions for product returns and warranty expenses (where estimates of likely future outflows of economic benefits constitute educated guesses, at best). It is unlikely that any two accountants would take identical assumptions in those areas. This is confirmed in Sect. 2.13 of Chapter 2, where it could have been seen that global car manufacturers differ significantly in terms of their accounting assumptions, regarding useful lives of their tangible and intangible assets. All such subjective judgments may erode an inter-company comparability of reported financial numbers (even when compared firms apply the same accounting standards, e.g. IFRS).

Those judgments also open a room for aggressive and fraudulent accounting practices (and the more complex the business operations of a given firm, the larger the room for its accounting misstatements).

- **Accounting principles are not immune to deliberate accounting manipulations.** There exist numerous techniques of an aggressive and fraudulent accounting that may completely devastate a comparability, reliability and relevance of reported financial statements. While the aggressive accounting constitutes a term used for manipulations typically committed by means of aggressive subjective judgments (such as overly long-assumed useful lives of fixed assets or too optimistic assumptions about a volume of future product returns), the fraudulent accounting is a label used for an outright fraud (e.g. reporting fictitious revenues or non-existent assets). A common denominator of both lies in their intended ultimate goal, which is to make an involved company's reported results looking different (typically better) than in a reality. One of the most important skills of any professional financial analyst is to be able to detect symptoms (so-called "red flags") of misstated accounting numbers. The most common accounting gimmicks, as well selected analytical ways of their detection, are demonstrated comprehensively in other, more advanced books (Welc, 2020).
- **Accounting principles are not perfect in measuring an impact of various economic events on a financial standing and business prospects of a company.** Not only subjective estimates (which are inevitable) and deliberate accounting manipulations (that are aimed at falsifying a true picture of a given firm's economic performance) may erode a comparability and reliability of corporate financial reports. There exist other (more objective) weaknesses of accounting principles that in some circumstances may dramatically limit the usefulness of financial statements (and may mislead financial statement users). Some of those pitfalls of a contemporary accounting (such as distortions brought about by non-controlling interests, omission of relevant assets on the balance sheet, imperfect write-downs of inventories or distortions caused by various inventory-flow methods) are discussed with details in other books (Welc, 2020).

3.11 EXERCISE—Retrospective Financial Statement Analysis of Lumentum Holdings

3.11.1 Tasks and Questions

Conduct an analysis of Lumentum Holdings financial performance, in fiscal years 2017 and 2018, on the basis of the company's consolidated financial statements, published in its annual report for fiscal year ended June 30, 2018:

1. For two most recent fiscal years (i.e. 2017 and 2018) calculate the following profitability ratios of Lumentum Holdings:

- (i) Gross margin on sales [= *Gross profit on sales/Sales revenues*].
- (ii) Margin on sales [= *Profit on sales/Sales revenues*].
- (iii) Operating profitability [= *Operating profit/Sales revenues*].
- (iv) EBITDA profitability [= *(Operating profit + Depreciation and amortization)/Sales revenues*].
- (v) Net profitability [= *Net earnings/Sales revenues*].
- (vi) Return on assets [= *Net earnings/Total assets at the end of period*].
- (vii) Return on equity [= *Net earnings/Shareholders' equity at the end of period*].

Note: Treat the redeemable **convertible preferred stock** as a part of equity (even though it is reported as a separate line item on the company's balance sheet).

2. On the basis of profitability ratios computed in point (1) answer the following questions:

- (i) Which of the calculated profitability ratios improve (grow) and which deteriorate (fall) between the fiscal years 2017 and 2018?
- (ii) Did any of the calculated ratios have negative values in any of the two investigated periods (if yes, then which ones)?
- (iii) Was the company's **Margin on sales** higher or lower than its **Operating profitability**?
- (iv) Was the company's **Operating profitability** higher or lower than its **Net profitability**?
- (v) Was the company able to achieve a double-digit **EBITDA profitability** in the investigated two fiscal years?
- (vi) Was the company able to achieve the **Return on assets** of at least 3% in the investigated two fiscal years?
- (vii) Was the company able to achieve the **Return on equity** of at least 8% in the investigated two fiscal years?
- (viii) What is the general picture of the Lumentum's profitability in the investigated two fiscal years (i.e. does the company's business seem generally profitable or unprofitable)?

3. For two most recent fiscal years (i.e. 2017 and 2018) calculate the following financial risk ratios of Lumentum Holdings:

- (i) Total indebtedness [= *Total liabilities/Total assets*].
- (ii) Current liquidity ratio [= *Current assets/Current liabilities*].
- (iii) Quick liquidity ratio [= *Current assets less inventory and pre-paid expenses/Current liabilities*].
- (iv) EBITDA to liabilities [= *EBITDA/Total liabilities*].

Note: Ratios (i) and (iv) are usually expressed as percentages, while ratios (ii) and (iii) are typically expressed as fractions.

4. On the basis of financial risk ratios computed in point (3) answer the following questions:

- (i) Did the Lumentum's **indebtedness** increase or decrease between the fiscal years 2017 and 2018? Did the company's indebtedness exceed its upper safety threshold of 66% in any of the two investigated years?
- (ii) Did the Lumentum's **current liquidity** increase or decrease between the fiscal years 2017 and 2018? Did the company's current liquidity fall below its lower safety threshold of 1.20 in any of the two investigated years?
- (iii) Did the Lumentum's **quick liquidity** increase or decrease between the fiscal years 2017 and 2018? Did the company's quick liquidity fall below its lower safety threshold of 1.00 in any of the two investigated years?
- (iv) Did the Lumentum's **EBITDA-to-liabilities ratio** increase or decrease between the fiscal years 2017 and 2018? Did the company's EBITDA-to-liabilities fall below its lower safety threshold of 20% in any of the two investigated years?
- (v) What is the general picture of the Lumentum's financial risk exposure in the investigated two fiscal years (i.e. does the company seem to be exposed to excessive financial risks, or rather to be keeping its solvency and financial liquidity risks under control)?

5. For two most recent fiscal years (i.e. 2017 and 2018) calculate the following turnover ratios of Lumentum Holdings:

- (i) Total indebtedness [= *Total liabilities/Total assets*].
- (ii) Current liquidity ratio [= *Current assets/Current liabilities*].
- (iii) Quick liquidity ratio [= *Current assets less inventory and pre-paid expenses/Current liabilities*].
- (iv) EBITDA to liabilities [= *EBITDA/Total liabilities*].

Note: Ratios (i) and (iv) are usually expressed as percentages, while ratios (ii) and (iii) are typically expressed as fractions.

6. On the basis of financial risk ratios computed in point (5) answer the following questions:

- (i) Did the Lumentum's **indebtedness** increase or decrease between the fiscal years 2017 and 2018? Did the company's indebtedness exceed its upper safety threshold of 66% in any of the two investigated years?
- (ii) Did the Lumentum's **current liquidity** increase or decrease between the fiscal years 2017 and 2018? Did the company's current liquidity fall below its lower safety threshold of 1.20 in any of the two investigated years?
- (iii) Did the Lumentum's **quick liquidity** increase or decrease between the fiscal years 2017 and 2018? Did the company's quick liquidity fall below its lower safety threshold of 1.00 in any of the two investigated years?
- (iv) Did the Lumentum's **EBITDA-to-liabilities ratio** increase or decrease between the fiscal years 2017 and 2018? Did the company's EBITDA-to-liabilities fall below its lower safety threshold of 20% in any of the two investigated years?

- (v) What is the general picture of the Lumentum's financial risk exposure in the investigated two fiscal years (i.e. does the company seem to be exposed to excessive financial risks, or rather to be keeping its solvency and financial liquidity risks under control)?
- 7. For two most recent fiscal years (i.e. 2017 and 2018) calculate the Lumentum's OPERATING ROE* and its three fundamental drivers (DuPont analysis):**
- Operating ROE* [= *Operating profit/Shareholders' equity***].
 - Operating profitability [= *Operating profit/Sales revenues*].
 - Asset turnover [= *Sales revenues/Total assets*].
 - Financial leverage [= *Total assets/Shareholders' equity***].
- Note: Ratios (i) and (ii) are usually expressed as percentages, while ratios (iii) and (iv) are typically expressed as fractions.
- * Due to a distorting negative impact of a one-off (unusual) item reported in fiscal year 2017 (i.e. "*Unrealized loss on derivative liabilities*"), which eroded net earnings comparability between both fiscal years, here the analysis of ROE will be done on the basis of operating profit (so it will be labeled as "Operating ROE")
- ** Treat the redeemable **convertible preferred stock** as a part of equity (even though it is reported as a separate line item on the company's balance sheet).
- 8. On the basis of financial risk ratios computed in point (1) answer the following questions:**
- Did the Lumentum's Operating ROE grow or fall between fiscal years 2017 and 2018?
 - Was the observed change of the Lumentum's Operating ROE (between fiscal years 2017 and 2018) attributable more to the operating factors (profitability and turnover) or to the financial leverage?
 - Should the observed change in the company's Operating ROE, combined with the changes of its three drivers, be treated as a positive (or negative) one?
- 9. For the company's fiscal year 2018 (ended June 30, 2018) calculate the Lumentum's P/E (price to earnings) and P/BV (price to book value) valuation multiples, based on the following inputs:**
- Lumentum's average share price in the fiscal year ended June 30, 2018.** Calculate the average share price as the arithmetic mean of eight numbers (four "High" and four "Low" prices), displayed for all four quarters of that fiscal year, on page 32 of the company's annual report.
 - Lumentum's number of BASIC (not diluted) shares outstanding (in million), as at the end of the company's fiscal year ended June 30, 2018.** Use here the respective number displayed on page 34 of the company's annual report for fiscal year 2018 (section "*Shares used to compute [...]*" on that page).
 - Lumentum's net (after-tax) earnings in FY 2018** (as reported in the company's income statement for that period).

- (iv) **Lumentum's total shareholder's equity (including redeemable preferred stock) as at the end of FY 2018** (as reported in the company's balance sheet for that period).
10. **On the basis of the valuation multiples (P/E and P/BV), computed in point (9), answer the following questions:**
- (i) Was the company's share price (average in fiscal year 2018) high or low, i.e. suggesting the company's overvaluation/undervaluation (respectively), based on its computed P/E multiple? Assume here that:
 - A given stock may be considered "expensive" (potentially overvalued) if its P/E stays above 20.00.
 - A given stock may be considered fairly priced (i.e. neither overvalued nor undervalued) if its P/E stays in the range between 15.00 and 20.00.
 - A given stock may be considered "cheap" (potentially undervalued or underpriced) if its P/E stays below 15.00.
 - (ii) Was the Lumentum's market value higher or lower than the book value of its total shareholder's equity (based on its computed P/BV multiple)?

3.11.2 Answers

1. All ratios are calculated and presented in the Excel file, titled "*Lumentum Analysis*", in a sheet "*Profitability Ratios*".
2. Interpretation of profitability ratios computed in point (1):
 - (i) All the calculated profitability ratios improved (grew) between the fiscal years 2017 and 2018.
 - (ii) Yes, ratios of Net profitability, Return on assets (ROA) and Return on equity (ROE) had negative values in fiscal year 2017.
 - (iii) In both investigated fiscal years, the Lumentum's **Margin on sales** exceeded the company's **Operating profitability**.
 - (iv) The company's **Operating profitability** was higher than its **Net profitability** in fiscal year 2017, while in the following fiscal year (2018), the net profitability significantly exceeded operating profitability.
 - (v) Yes, in both analyzed fiscal years the Lumentum's **EBITDA profitability** exceeded 10%.
 - (vi) No, the company's **Return on assets** was negative in its fiscal year 2017. However, one year later the ratio improved significantly to 15.7% (i.e. much more than 3%).
 - (vii) No, the company's **Return on equity** was negative in its fiscal year 2017. However, one year later the ratio improved significantly to 25.8% (i.e. much more than 8%).
 - (viii) The Lumentum's business seems generally profitable in the analyzed two fiscal years. Although the company reported quite deep pre-tax and after-tax losses in fiscal year 2017, they resulted almost exclusively

from a one-off factor (“*Unrealized loss on derivative liabilities*”), unrelated directly to the company’s core business performance. Apart from this, the company achieved positive operating profitability in both fiscal years, with a significant improvement between 2017 and 2018.

3. **All ratios are calculated and presented in the Excel file, titled “Lumentum Analysis”, in a sheet “Financial Risk Ratios”:**
4. **Interpretation of financial risk ratios computed in point (3):**
 - (i) The Lumentum’s **indebtedness** fell between the fiscal years 2017 and 2018. In none of those two periods the company’s indebtedness exceeded its upper safety threshold of 66% (since it was kept below 50%).
 - (ii) The Lumentum’s **current liquidity** increased slightly between its fiscal years 2017 and 2018. In none of those two periods the company’s current liquidity fell below its lower safety threshold of 1.20 (quite the reverse, it was kept on much higher levels, exceeding 5.00).
 - (iii) The Lumentum’s **quick liquidity** increased slightly between its fiscal years 2017 and 2018. In none of those two periods the company’s quick liquidity fell below its lower safety threshold of 1.00 (quite the reverse, it was kept on much higher levels, near 4.00 or even more).
 - (iv) The Lumentum’s **EBITDA-to-liabilities ratio** increased significantly between its fiscal years 2017 and 2018. It fell slightly below its lower safety threshold of 20% in fiscal year 2017, but one year later it improved significantly, to 35% (i.e. much above the recommended minimum value of 20%).
 - (v) The Lumentum’s financial risk exposure seems to be totally under control, since the company keeps safe indebtedness (much below the safety threshold of 66%, and falling) and very high liquidity ratios. Furthermore, in its most recent fiscal year the company generated EBITDA that covered 35% of its total liabilities (i.e. much more than this ratio’s lower safety threshold of 20%).
5. **All ratios are calculated and presented in the Excel file, titled “Lumentum Analysis”, in a sheet “Turnover Ratios”.**
6. **Interpretation of turnover ratios computed in point (5):**
 - (i) The Lumentum’s **indebtedness** fell between the fiscal years 2017 and 2018. In none of those two periods the company’s indebtedness exceeded its upper safety threshold of 66% (since it was kept below 50%).
 - (ii) The Lumentum’s **current liquidity** increased slightly between its fiscal years 2017 and 2018. In none of those two periods the company’s current liquidity fell below its lower safety threshold of 120 (quite the reverse, it was kept on much higher levels, exceeding 5.00).
 - (iii) The Lumentum’s **quick liquidity** increased slightly between its fiscal years 2017 and 2018. In none of those two periods the company’s quick liquidity fell below its lower safety threshold of 1.00 (quite the reverse, it was kept on much higher levels, near 4.00 or even more).
 - (iv) The Lumentum’s **EBITDA-to-liabilities ratio** increased significantly between its fiscal years 2017 and 2018. It fell slightly below its lower

- safety threshold of 20% in fiscal year 2017, but one year later it improved significantly, to 35% (i.e. much above the recommended minimum value of 20%).
- (v) The Lumentum's financial risk exposure seems to be totally under control, since the company keeps safe indebtedness (much below the safety threshold of 66%, and falling) and very high liquidity ratios. Furthermore, in its most recent fiscal year the company generated EBITDA that covered 35% of its total liabilities (i.e. much more than this ratio's lower safety threshold of 20%).
7. **All ratios are calculated and presented in the Excel file, titled “*Lumentum Analysis*”, in a sheet “*ROE & DuPont*”.**
8. **Interpretation of DuPont ratios computed in point (7):**
- (i) The Lumentum's Operating ROE grew significantly (almost twofold) between fiscal years 2017 and 2018.
 - (ii) The observed improvement of the Lumentum's Operating ROE (between fiscal years 2017 and 2018) was attributable entirely to the operating factors (i.e. significant improvement in operating profitability, from 4.8 to 11.2%, combined with a insignificant change of asset turnover), and was achieved despite a slight reduction of the financial leverage (which fell from 1.88 to 1.64).
 - (iii) The observed improvement in the company's Operating ROE should be interpreted as very positive, since it was driven by a significant improvement of operating profitability (and was achieved despite a reduction of financial risks, thanks to a reduction of the company's financial leverage).
9. **Both valuation multiples are calculated and presented in the Excel file, titled “*Lumentum Analysis*”, in a sheet “*Valuation Multiples*”.**
10. **Interpretation of the valuation multiples (P/E and P/BV), computed in point (9):**
- (i) The value of the company's P/E multiple equaled 14.45 (based on arithmetic mean of its high and low stock prices in all four quarters of FY 2018), so the company's stock price seemed moderately “cheap” (potentially undervalued or underpriced).
 - (ii) The Lumentum's market value was decisively higher (by more than 3.5 times) than the book value of its total shareholder's equity, with its P/BV multiple of 373.

References

- Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, 23, 589–609.
- Altman, E. I. (2002). *Bankruptcy*. Blackwell.
- Atrill, P. (2000). *Financial Management for Non-Specialists*. Pearson Education Limited.

- Aziz, A., Emanuel, D., & Lawson, G. (1988). Bankruptcy Prediction: An Investigation of Cash Flow Based Models. *Journal of Management Studies*, 25, 419–437.
- Bancel, F., & Mittoo, U. R. (2014). The Gap Between Theory and Practice of Firm Valuation: Survey of European Valuation Experts. *Journal of Applied Corporate Finance*, 26, 106–117.
- Beaver, W. H. (1966). Financial Ratios as Predictors of Failure. *Journal of Accounting Research*, 5, 71–111.
- Beaver, W. H., McNichols, M., & Rhie, J. W. (2005). Have Financial Statements Become Less Informative? Evidence from the Ability of Financial Ratios to Predict Bankruptcy. *Review of Accounting Studies*, 10, 93–122.
- Bhandari, S., & Iyer, R. (2013). Predicting Business Failure Using Cash Flow Statement Based Measures. *Managerial Finance*, 39, 667–676.
- Caouette, J. B., Altman, E. I., Narayanan, P., & Nimmo, R. W. J. (2008). *Managing Credit Risk. The Great Challenge for Global Financial Markets*. Wiley.
- Casey, C., & Bartczak, N. (1985). Using Operating Cash Flow Data to Predict Financial Distress: Some Extensions. *Journal of Accounting Research*, 23, 384–401.
- Charalambous, C., Charitou, A., & Kaourou, F. (2000). Comparative Analysis of Artificial Neural Network Models: Application in Bankruptcy Prediction. *Annals of Operations Research*, 99, 403–425.
- Chava, S., & Jarrow, R. A. (2004). Bankruptcy Prediction with Industry Effects. *Review of Finance*, 8, 537–569.
- Damodaran, A. (1996). *Investment Valuation. Tools and Techniques for Determining the Value of Any Asset*. Wiley.
- David, F. R. (2011). *Strategic Management. Concepts and Cases*. Prentice Hall.
- Demerjian, P. (2007). *Financial Ratios and Credit Risk: The Selection of Financial Ratio Covenants in Debt Contracts* (AAA 2007 Financial Accounting and Reporting Section [FARS] Meeting Paper).
- Demerjian, P. (2009). *Information, Monitoring, and Manipulation: The Economic Role of Covenant Measurement* (AAA 2010 Financial Accounting and Reporting Section [FARS] Papers).
- Demiroglu, C., & James, C. (2010). The Information Content of Bank Loan Covenants. *The Review of Financial Studies*, 23, 3700–3737.
- DePamphilis, D. M. (2010). *Mergers, Acquisitions and Other Restructuring Activities. An Integrated Approach to Process, Tools, Cases and Solutions*. Elsevier.
- Dickinson, V. (2011). Cash Flow Patterns as a Proxy for Firm Life Cycle. *The Accounting Review*, 86, 1969–1994.
- Epstein, L. (2009). *The Complete Idiot's Guide to Value Investing*. Penguin Group.
- Evans, F. C., & Bishop, D. M. (2001). *Valuation for M&A Building Value in Private Companies*. Wiley.
- Fernandez, P. (2002). *Valuation Using Multiples. How Do Analysts Reach Their Conclusions?* IESE Business School Research Papers.
- Fridson, M., & Alvarez, F. (2002). *Financial Statement Analysis: A Practitioner's Guide*. Wiley.
- Ganguin, B., & Bilardello, J. (2005). *Fundamentals of Corporate Credit Analysis*. McGraw-Hill.
- Gentry, J. A., Newbold, P., & Whitford, D. T. (1985). Predicting Bankruptcy: If Cash Flow's Not the Bottom Line, What Is? *Financial Analysts Journal*, 41, 47–58.
- Gilbert, L. R., Menon, K., & Schwartz, K. B. (1990). Predicting Bankruptcy for Firms in Financial Distress. *Journal of Business, Finance and Accounting*, 17, 161–171.
- Graham, B., & Dodd, D. (1934). *Security Analysis*. McGraw-Hill.
- Gray, I., & Manson, S. (2011). *The Audit Process. Principles, Practice and Cases*. South-Western Cengage Learnings, Andover.
- Greenwald, B. C. N., Kahn, J., Sonkin, P. D., & Van Biema, M. (2001). *Value Investing. From Graham to Buffett and Beyond*. Wiley.
- Gupta, J., Wilson, N., Gregoriou, A., & Healy, J. (2014). The Value of Operating Cash Flow in Modeling Credit Risk for SMEs. *Applied Financial Economics*, 24, 649–660.
- Hackel, K. S. (2011). *Security Valuation and Risk Analysis. Assessing Value in Investment Decision Making*. McGraw-Hill.

- Higgins, R. C. (2000). *Analysis for Financial Management*. McGraw-Hill.
- Jantadej, P. (2006). *Using the Combinations of Cash Flow Components to Predict Financial Distress*. ETD Collection for University of Nebraska—Lincoln (AAI3216429).
- Jones, C. P. (1998). *Investments Analysis and Management*. Wiley.
- Jury, T. (2012). *Cash Flow Analysis and Forecasting. The Definitive Guide to Understanding and Using Published Cash Flow Data*. Wiley.
- Khan, A. H., & Guruli, M. R. (2015). Predicting Bankruptcy by Liquidity Ratios Analysis. *Journal UMP Social Sciences and Technology Management*, 3, 372–380.
- Li, N. (2016). Performance Measures in Earnings-Based Financial Covenants in Debt Contracts. *Journal of Accounting Research*, 54, 1149–1186.
- Lie, H., & Lie, E. (2002). Multiples Used to Estimate Corporate Value. *Financial Analysts Journal*, 58, 44–54.
- Monks, R. A. G., & Lajoux, A. R. (2011). *Corporate Valuation for Portfolio Investment. Analyzing Assets, Earnings, Cash Flows, Stock Price, Governance, and Special Situations*. Wiley.
- Montier, J. (2009). *Value Investing. Tools and Techniques for Intelligent Investment*. Wiley.
- Moyer, R. C., McGuigan, J. R., & Kretlow, W. J. (1995). *Contemporary Financial Management*. West Publishing Company.
- Mulford, C. W., & Comiskey, E. E. (2002). *The Financial Numbers Game Detecting Creative Accounting Practices*. Wiley.
- Mulford, C. W., & Comiskey, E. E. (2005). *Creative Cash Flow Reporting. Uncovering Sustainable Financial Performance*. Wiley.
- Ohlson, J. A. (1980). Financial Ratios and the Probabilistic Prediction of Bankruptcy. *Journal of Accounting Research*, 18, 109–131.
- Palepu, K. G., Healy, P. M., & Bernard, V. L. (2004). *Business Analysis & Valuation Using Financial Statements*. Thomson South-Western.
- Palepu, K. G., Healy, P. M., & Peek, E. (2013). *Business Analysis and Valuation IFRS*. Cengage Learning.
- Pratt, S. P., & Niculita, A. V. (2008). *Valuing a Business. The Analysis and Appraisal of Closely Held Companies*. McGraw-Hill.
- Revine, L., Collins, D. W., & Johnson, W. B. (2002). *Financial Reporting & Analysis*. Prentice Hall.
- Robinson, T. R., Henry, E., Pirie, W. L., & Broihahn, M. A. (2012). *International Financial Statement Analysis*. Wiley.
- Rozenbaum, O. (2014). *EBITDA Disclosure and Overinvestment in Capital*. SSRN Electron. J. <https://ssrn.com/abstract=2543934>
- Saliers, E. A. (1924). *Accountant's Handbook*. The Ronald Press Company.
- Shumway, T. (2001). Forecasting Bankruptcy More Accurately: A Simple Hazard Model. *Journal of Business*, 74, 101–124.
- Stickney, C. P., Brown, P. R., & Wahlen, J. M. (2004). *Financial Reporting and Statement Analysis. A Strategic Perspective*. Thomson South-Western.
- Taffler, R. (1984). Empirical Models for the Monitoring of UK Corporations. *Journal of Banking and Finance*, 8, 199–227.
- Unegbu, A., & Adefila, J. (2013). Efficacy Assessments of Z-Score and Operating Cash Flow Insolvency Predictive Models. *Open Journal of Accounting*, 2, 53–78.
- Verninmen, P., Quiry, P., Dallocchio, M., Le Fur, Y., & Salvi, A. (2005). *Corporate Finance Theory and Practice*. Wiley.
- Ward, T. J., & Foster, B. P. (1997). A Note on Selecting a Response Measure for Financial Distress. *Journal of Business, Finance and Accounting*, 24, 869–879.
- Welc, J. (2017a). EBITDA vs. Cash Flows in Bankruptcy Prediction on the Polish Capital Market. *European Financial and Accounting Journal*, 12, 91–103.
- Welc, J. (2017b). Impact of Non-Controlling Interests on Reliability of Consolidated Income Statement and Consolidated Balance Sheet. *American Journal of Business, Economics and Management*, 5, 51–57.

- Welc, J. (2020). *Reading Between the Lines of Corporate Financial Reports. In Search of Financial Misstatements*. Palgrave Macmillan.
- Wheelen, T. L., & Hunger, J. D. (1995). *Strategic Management and Business Policy*. Addison Wesley.
- White, C. (2004). *Strategic Management*. Palgrave Macmillan.
- Zhang, W. (2008). *Real Activities Manipulation to Meet Analysts' Cash Flow Forecasts*. SSRN Electron. J. <https://ssrn.com/abstract=1013228>
- Zmijewski, M. E. (1984). Methodological Issues Related to the Estimation of Financial Distress Prediction Models. *Journal of Accounting Research*, 22, 59–82.



Prospective Financial Statement Analysis and Simulations

4

4.1 Introduction

All preceding chapters of this book dealt with a historical financial statement analysis only. As was pointed in a last section of the previous chapter, one of the major weaknesses of published corporate financial reports (and of analytical tools based on them) lies in their entirely retrospective orientation. In other words, published accounting records are capable of showing a past business performance only. Meanwhile, most managerial and investment decisions are future-oriented and call for at least some simplified prospective investigations. Accordingly, in this chapter a simple step-by-step procedure of a financial model building, as well as prospective financial simulations, will be demonstrated and exemplified.

Common applications of the prospective financial statement analysis include (among others):

- **Business valuation**, based on discounted forecasted corporate profits and cash flows (where predicted amounts of individual items of primary financial statements serve as main inputs).
- Assessment of a given entity's **exposure to various business risks** (including an insolvency risk) by means of so-called sensitivity (or "what if") simulations, in which diverse scenarios and assumptions, regarding key performance drivers (e.g. raw material costs, sales prices, currency rates, interest rates, etc.) are factored into a financial model and examined in terms of their likely impact on an investigated company's future performance.

Supplementary Information The online version contains supplementary material available at
https://doi.org/10.1007/978-3-030-97582-1_4

- Estimation of a given firm's **debt capacity**, i.e. an amount of debts it may reasonably borrow, without becoming exposed to an excessive risk of losing financial liquidity (and solvency).
- Estimation of a likely **future funding gap** (that will have to be bridged, e.g. by an issuance of new equity shares) **or excess of funds** (that may be spent e.g. on extra dividends or share buybacks), under various assumed scenarios of a given company's economic environment.

The latter perspective, i.e. estimates of likely amounts of funding gap/excess of funds, will constitute a main focus of an analytical procedure and numerical example presented in the following sections of this chapter. In contrast, a comprehensive real-life case study of Norwegian Air Shuttle (presented and discussed with details in Chapter 5) will demonstrate the usefulness of a prospective financial statement simulation in a business risk assessment (from a point of view of both shareholders as well as creditors).

Entire contents of the following sections of this chapter will deal with actual (for fiscal years 2007 and 2008) as well as simulated (for fiscal year 2009) consolidated financial results of Volkswagen Group. This detailed future-oriented financial statement analysis is aimed at demonstrating (in a step-by-step way) basic analytical procedures and mechanics of prospective financial simulations. Accordingly, for the educative purposes, the case study presented in this chapter will be based on purely hypothetical assumptions (instead of any actual macroeconomic data or Volkswagen Group's own published managerial guidelines or forecasts), regarding the investigated company's economic environment in fiscal year 2009. As will be shown, even such hypothetical and simplistic assumptions may lead to interesting and insightful conclusions, regarding a financial standing of an examined business.

4.2 Analytical Procedure in a Prospective Financial Statement Analysis

Multiple approaches to a financial model building, as well as multiple step-by-step procedures of prospective financial statement simulations, are offered by a professional literature. This is due to the fact that this element of a business performance analysis has more features of an art than a science, and a given analyst's preference for a particular analytical approach (and structure as well as level of detail of his or her model) depends on numerous factors, including an availability of internal accounting data (that differs between an investigated company's insiders and external analysts), a purpose of a scrutiny (e.g. a rigorous "due diligence" research vs. rough estimate of an examined firm's funding needs) or a given analyst's preference for more detailed (vs. simpler and less time-consuming) analytical procedures. In the following sections, a rather simple approach will be demonstrated (for three hypothetical sets of assumptions), based on only several

key line items of the Volkswagen Group's financial statements. However, a simplistic procedure presented below may be easily enriched and made more detailed (when necessary).

In this chapter, the following order of sequential steps will be applied, in preparing a simulation of a full set of three primary financial statements (for three hypothetical sets of assumptions):

1. STEP 1: Forecast of sales revenues.
2. STEP 2: Forecast of operating expenses, separately for cost of goods sold (abbreviated to "CoGS") and selling, general and administrative expenses (abbreviated to "SG&A costs").
3. STEP 3: Forecast of non-operating income statement items (including financial income and expenses), income taxes and after-tax earnings.
4. STEP 4: Preparation of a preliminary prospective income statement (to be revised later on).
5. STEP 5: Forecast of carrying amounts of fixed (noncurrent) assets and resulting depreciation and amortization charges.
6. STEP 6: Forecasts of individual items of a working capital (inventory, receivable accounts and operating payables).
7. STEP 7: Preliminary forecast of a dividend payout and a carrying amount of shareholders' equity, as well as an amount of financial (interest-bearing) debts (to be revised later on).
8. STEP 8: Preparation of a preliminary balance sheet (to be revised later on).
9. STEP 9: Closing the preliminary balance sheet (with corresponding revisions to the preliminary income statement), based on the following principles:
 - (i) If a forecasted amount of combined equity and liabilities (i.e. a total carrying amount on a right-hand side of the preliminary balance sheet) exceeds an amount of forecasted total assets, then a **funding excess** emerges, that may be "consummated" by either (i) an increase in the amount of dividend paid out (to above what was preliminarily assumed before), or (ii) an increase in the amount of cash balances (or other financial assets) held by an entity, or (iii) a reduction of the amount of the company's financial obligations (with a corresponding reduction of its interest expenses).
 - (ii) If the forecasted total assets exceed the combined equity and liabilities, then a **funding gap** emerges, that may be bridged by either (i) an increase in the amount of the company's financial obligations (with a corresponding increase in its interest expenses), or (ii) an increase in the amount of equity (that implies an issuance of new shares), or (iii) a reduction of carrying amounts of some assets (e.g. via disposals of non-operating assets or by sale-and-lease-back transactions).
10. STEP 10: Preparation of the completed prospective income statement and balance sheet (after adjusting their preliminary versions for the impacts of all analytical interventions conducted in STEP 9).

11. STEP 11: Preparation of a prospective cash flow statement, based on mutual relationships between the balance sheet and income statement on one side, and cash flow statement on the other side.
12. STEP 12: Evaluation of the investigated company's simulated future performance (e.g. with the use of financial statement ratios discussed in Chapter 3), based on its forecasted primary financial statements obtained in STEP 10 and STEP 11.

4.3 Past (Historical) Financial Statements as a Departure Point in a Prospective Financial Statement Analysis

A “runway” for a prospective financial statement simulation is typically “build” from an investigated firm’s historical accounting numbers. However, its original (reported) financial statements are usually converted (by an analyst) into a more condensed analytical sheet, that includes fewer line items than in the company’s published reports. This makes an entire prospective investigation more digestible and easier to navigate. Accordingly, Tables 4.1 and 4.2 contain the Volkswagen Group’s condensed income statement and balance sheet, respectively, converted

Table 4.1 Condensed income statement of Volkswagen Group for fiscal years 2007 and 2008 (based on data shown in Table 1.1)

In EUR million	2007	2008
(1) Sales revenue	108,897	113,808
(2) Cost of sales (CoGS)	92,603	96,612
(3) Gross profit [= (1) – (2)]	16,294	17,196
(4) Selling, general and administrative costs (SG&A)	11,727	13,294
(5) Profit on sales [= (3) – (4)]	4,567	3,902
(6) Other operating income/expenses (net)	1,584	2,431
(7) Operating profit [= (5) + (6)]	6,151	6,333
(8) Finance costs	1,647	1,815
(9) Other financial gains/losses (net)	2,039	2,090
(10) Profit before tax [= (7) – (8) + (9)]	6,543	6,608
(11) Income tax	2,421	1,920
(12) Profit after tax [= (10) – (11)]	4,122	4,688
Additional data (from cash flow statement)		
Depreciation and amortization ^a	9,058	8,406
Dividend paid	497	722

^aAccording to calculations shown beneath Table 3.1 in Chapter 3

Source Annual Report of Volkswagen Group for Fiscal year 2008

Table 4.2 Condensed balance sheet of Volkswagen Group for fiscal years 2007 and 2008 (based on the data shown in Tables 1.5, 1.6, 1.7 and 1.9)

In EUR million	2007	2008
(1) Noncurrent assets, including:	76,841	91,756
(1a) Tangible and intangible noncurrent assets (excl. goodwill)	34,146	42,530
(1b) Financial services receivables	27,522	31,855
(1c) Other noncurrent assets (incl. goodwill)	15,173	17,371
(2) Current assets, including:	68,516	76,163
(2a) Inventories	14,031	17,816
(2b) Current receivables	30,605	33,004
(2c) Cash and other current assets	23,880	25,343
(3) Total assets [= (1) + (2)]	145,357	167,919
(4) Equity	31,938	37,388
(5) Total liabilities (noncurrent and current), including:	113,419	130,531
(5a) Operating payables	55,427	61,151
(5b) Financial liabilities (borrowings)	57,992	69,380
(6) Total equity and liabilities [= (4) + (5)]	145,357	167,919

Source Annual report of Volkswagen Group for fiscal year 2008

from what could have been seen in the company's annual report for fiscal year 2008 (as well as in Tables 1.1, 1.5, 1.6, 1.7 and 1.9 in Chapter 1).

The following analytical assumptions have been taken when preparing the condensed income statement, as displayed in Table 4.1.

- “*Distribution expenses*” and “*Administrative expenses*”, reported as separate items on the VW’s income statement, have been merged into a single line item labeled as “*Selling, general and administrative costs (SG&A)*”, by summing the respective numbers from both reported line items.
- “*Other operating income*” and “*Other operating expenses*”, reported as separate items on the VW’s income statement, have been merged into a single line item labeled as “*Other operating income / expenses (net)*”, by netting the respective numbers from both reported line items (i.e. by subtracting other operating expenses from other operating income).
- “*Share of profits and losses of equity-accounted investments*” and “*Other financial result*”, reported as separate items on the VW’s income statement, have been merged into a single line item labeled as “*Other financial gains / losses (net)*”, by summing the respective numbers from both reported line items.

The following analytical assumptions have been taken when preparing the condensed balance sheet, as displayed in Table 4.2:

- The VW's noncurrent (fixed) assets, that on the company's reported balance sheet include as many as ten separate line items (as may be seen in Table 1.5 in Chapter 1), have been grouped into three homogenous classes, with differing economic substances (and behavior): (i) "*Tangible and intangible non-current assets (excl. goodwill)*", (ii) "*Financial services receivables*" and (iii) "*Other noncurrent assets (incl. goodwill)*". The former constitutes a sum of carrying amounts of three depreciable and amortizable operating (but non-financial) items disclosed on the VW's balance sheet: "*Intangible assets*", "*Property, plant and equipment*" and "*Leasing and rental assets*", stripped out from goodwill (since it is not subject to periodic amortization charges). The item "*Financial services receivables*," in turn, includes operating financial assets (resulting mostly from the company's customer and dealer financing programs, as explained in Sect. 2.7 of Chapter 2). In contrast to both these line items, "*Other noncurrent assets*" capture everything else (including goodwill), i.e. all the Volkswagen Group's long-term assets that are not directly related to its core-business operations (such as "*Investment property*", "*Equity-accounted investments*"). As will be seen later in the chapter, such a three-class approach is justified on a ground of a varying behavior (and different underlying drivers) of individual assets that fall into these three classes.
- Likewise, the VW's current (short-term) assets, that on the company's reported balance sheet consist of eight separate line items (as might be seen in Table 1.6 in Chapter 1), have been grouped into three more homogeneous classes, with varying economic substances (and differing underlying drivers): (i) "*Inventories*" (related to cost of sales), (ii) "*Current receivables*" (related to sales revenues) and (iii) "*Cash and other current assets*" (resulting from an extent of a funding excess or gap). The item "*Current receivables*" constitutes a sum of two revenue-related items, reported separately on the VW's balance sheet (but having a similar economic substance, as explained in Sect. 2.7 of Chapter 2), i.e. "*Trade receivables*" and "*Financial services receivables*". The item "*Cash and other current assets*" includes, apart from cash and cash equivalents, various short-term non-operating assets (such as "*Current tax receivables*", "*Assets held for sale*").
- Volkswagen Group's equity, that on the company's reported balance sheet is broken down into five separate line items (as may be seen in Table 1.9 in Chapter 1), has been condensed into a single item labeled as "*Equity*".
- Finally, the company's liabilities (both noncurrent and current ones), that on the company's balance sheet include as many as thirteen separate line items (as may be seen in Table 1.7 in Chapter 1), have been grouped into just two classes, with varying economic substances (and differing behavior): "*Operating payables*" (related to operating expenses) and "*Financial liabilities (borrowings)*" (resulting from an extent of a funding excess or gap). The latter constitutes a sum of "*Noncurrent financial liabilities*" and "*Current financial liabilities*" (i.e. all interest-bearing, non-operating debts), while the former simply captures anything else (i.e. all the VW's obligations other than its financial liabilities).

4.4 Context of a Prospective Financial Simulation and Its Underlying Assumptions

Let's now suppose that You are a stock market investor who scrutinizes Volkswagen Group's financial performance in early 2009, i.e. in the middle of the global financial crisis that broke out in late 2008 and severely affected a car industry. You have gone through an entire analysis of the VW's past results, reported for fiscal years 2007 and 2008 (covered by Chapter 3), but You are aware of its major weakness, stemming from its fully retrospective focus. Since You know that the company's performance in recessionary times (i.e. in fiscal year 2009) may look completely different than during a preceding economic boom, You are interested in simulating the company's likely financial results, under various sets of hypothetical assumptions. Suppose that You are considering the following three alternative scenarios, regarding an economic environment in fiscal year 2009:

- SCENARIO 1: A stagnation of the global economy (i.e. neither an economic growth nor a recession in 2009).
- SCENARIO 2: A moderate recession of the global economy (i.e. a contraction of the global GDP by less than -3% in 2009).
- SCENARIO 3: A deep recession of the global economy (i.e. a contraction of the global GDP by more than -5% in 2009).

Let's now suppose that under those three scenarios You can reasonably expect the following impacts of a macroeconomic environment on individual items of the Volkswagen Group's income statement:

1. **Sales revenues in 2009:** In light of a very cyclical nature of the car industry You can expect that the company's revenues would be affected significantly, as follows:
 - a. SCENARIO 1: The company's revenues fall by 5% y/y.
 - b. SCENARIO 2: The company's revenues fall by 15% y/y.
 - c. SCENARIO 3: The company's revenues fall by 30% y/y.
2. **Gross margin on sales [= Gross profit/Sales revenues] in 2009:** In face of intensive market pressures (and extraordinarily fierce price competition, brought about by a sharply shrinking demand for new cars), the company not only would suffer from falling volumes of sales but would also have to cut its sales prices, with the following eroding impacts on its margins:
 - a. SCENARIO 1: The gross margin on sales deteriorates by 5% .
 - b. SCENARIO 2: The gross margin on sales deteriorates by 15% .
 - c. SCENARIO 3: The gross margin on sales deteriorates by 30% .
3. **Ratio of selling, general and administrative costs (SG&A) to sales revenues in 2009:** Since many of those non-manufacturing operating expenses have a fixed cost nature (at least in a short run), their share in revenues is negatively correlated with an amount of the latter. Accordingly, the following impacts of the assumed scenarios could be expected here:

- a. SCENARIO 1: The ratio increases by 5%.
 - b. SCENARIO 2: The ratio increases by 10%.
 - c. SCENARIO 3: The ratio increases by 20%.
4. **Other operating income/expenses (net):** Since most of the items appearing on this level of an income statement have one-off and unpredictable nature (in terms of both timing of their occurrence as well as their likely amounts), a reasonable approach is to assume their zero (net) future amounts.
5. **Finance costs:** Initially, they may be assumed intact (and adjusted upwards or downwards later on), i.e. on the same amount as reported for fiscal year 2008, based on a preliminary assumption according to which the company will maintain an amount of its borrowings intact (i.e. the same as at the end of fiscal year 2008).
6. **Other financial gains/losses (net):** Similarly as in the case of other operating income and expenses, many of the items appearing on this level of an income statement have one-off and largely unpredictable nature, so a reasonable approach (at least preliminarily) is to assume their zero (net) future amounts.
7. **Income tax expense:** When no changes in statutory tax rates are expected, then an effective income tax rate [= Income tax/Profit before tax] may be assumed to stay intact in 2009 (also in a case of an expected pre-tax loss, that gives a rise to tax-loss carry forwards and a resulting negative income tax rate).

As regards the company's balance sheet, let's suppose that the following likely impacts of the considered three scenarios, on individual items, can be reasonably expected:

1. **Tangible and intangible noncurrent assets (excl. goodwill):** Since these are fixed operating assets, whose carrying amounts are driven by long-term changes in the company's scale of operations (instead of short-term variations in its sales), they may be forecasted with the use of an inverse of asset turnover ratio [= Tangible and intangible noncurrent assets/Revenues], based on a long-term revenue trend (i.e. an amount of future annual revenues extrapolated from prior revenue trend).
2. **Noncurrent financial services receivables and Current receivables:** Since these are assets anchored at revenues (i.e. reflecting deferred payment terms offered to the company's customers), they may be forecasted with the use of an inverse of receivables turnover ratio [= Receivables/Revenues], based on the following assumptions (that take into account a likely impact of an expected recession on collection periods of the company's receivable accounts):
 - a. SCENARIO 1: Year-end inversed ratios of receivables turnover stay intact, i.e. on the same level as in 2008 (it is assumed here that a stagnation of the global economy does not lengthen an average receivables collection time).
 - b. SCENARIO 2: Year-end inversed ratios of receivables turnover increase by 15% (i.e. the receivables turnover deteriorates moderately).
 - c. SCENARIO 3: Year-end inversed ratios of receivables turnover increase by 30% (i.e. the receivables turnover deteriorates significantly).

3. **Other noncurrent assets:** Their carrying amount may be assumed intact (i.e. staying at the same amount as at the end of 2008), when the forecasted profit before tax is positive in fiscal year 2009. If, however, the company incurs a pre-tax loss in fiscal year 2009, then the carrying amount of other noncurrent assets will be increased by tax-loss carryforwards (a component of deferred tax assets), equal to an absolute amount of negative income tax, computed for that period under such a scenario.
4. **Inventories:** Since these are assets anchored to cost of sales (CoGS), they may be forecasted with the use of an inverse of inventory turnover ratio [= Inventories/Cost of sales], based on the following assumptions (that take into account a likely impact of an expected recession on demand for cars, as well as on the inventory levels):
 - a. SCENARIO 1: Year-end inversed ratio of inventory turnover stays intact, i.e. on the same level as in 2008 (it is assumed here that a stagnation of the global economy does not cause a stockpiling of excess inventories).
 - b. SCENARIO 2: Year-end inversed ratio of inventory turnover increases by 20% (i.e. the inventory turnover deteriorates moderately, due to a contracting demand and a resulting stockpile of excess inventories of unsold cars).
 - c. SCENARIO 3: Year-end inversed ratio of inventory turnover increases by 40% (i.e. the inventory turnover deteriorates significantly, due to a deeply shrinking demand and a resulting stockpile of excess inventories of unsold cars).
5. **Cash and other current assets:** Initially, they may be assumed intact (and adjusted upwards or downwards later on), i.e. on the same carrying amount as at the end of fiscal year 2008. This will be one of several items through which both sides of a prospective balance sheet may be equalized, in a final stage of the analysis.
6. **Operating payables:** Since these are liabilities directly related to operating expenses (i.e. driven by deferred payment terms offered by the company's suppliers), they may be forecasted with the use of an inverse of payables turnover ratio [= Payables/(Cost of sales + SG&A expenses—Depreciation and amortization)], based on the following assumptions (that take into account the company's possible reaction to an expected recession and a resulting deterioration of its other cash flow drivers, such as operating margins, receivables turnover and inventory turnover):
 - a. SCENARIO 1: Year-end inversed ratio of payables turnover stays intact, i.e. on the same level as in 2008 (it is assumed here that a stagnation of the global economy does not cause a change in the company's payment terms to suppliers).
 - b. SCENARIO 2: Year-end inversed ratio of payables turnover increases by 10% (i.e. the company moderately slows down its payments to suppliers).
 - c. SCENARIO 3: Year-end inversed ratio of payables turnover increases by 20% (i.e. the company significantly slows down its payments to suppliers).
7. **Financial liabilities (borrowings):** Initially, they may be assumed intact (and adjusted upwards or downwards later on), i.e. on the same carrying amount as

at the end of fiscal year 2008. Similarly as cash and other current assets, this will be one of several items through which both sides of the prospective balance sheet may be equalized, in a final stage of the analysis.

8. **Equity:** Its preliminary year-end amount (i.e. before any issuance of new shares and/or share buybacks are taken into account) may be calculated as follows: *Equity at the end of the previous year (2008) + Net earnings forecasted for a given year (2009) – Dividends paid out in a given year (2009)*, with the following additional options:
 - a. When an investigated company follows a specified and announced dividend policy (e.g. a constant amount of dividend per share or a targeted dividend payout percentage), that policy may be used to forecast an amount of the dividend paid out to shareholders in a future period.
 - b. When a net loss is predicted for an investigated future period, then a given company's dividend policy may be modified (e.g. a freezing of a dividend payout may be considered for a particularly poor year, featured by an unusually deep net loss).
 - c. Similarly as cash (on a left-hand side of balance sheet), as well as financial liabilities (on its right-hand side), the equity will be one of several items through which both sides of the prospective balance sheet may be equalized (e.g. by an assumed issuance of new shares), in a final stage of the analysis.

Aside, a depreciation and amortization expense (which is not reported as a separate line item on the Volkswagen Group's income statement, but will be needed to construct the company's prospective cash flow statement) may be forecasted with the use of a quotient of the depreciation and amortization charged in a given year to a carrying amount of depreciable and amortizable fixed assets at the end of the previous year. If such a ratio stood stable (or hovered around some value, with no any discernible trend) in prior few years, then its average value for those past periods may be used. If, in contrast, some upward or downward trend has been observed, then the ratio itself may be extrapolated accordingly.

4.5 Preliminary Income Statement and Preliminary Balance Sheet

According to a set of analytical assumptions developed in the preceding section, selected key financial statement ratios (that will be used in forecasting) must be calculated first, for prior periods, and then modified in accordance with the assumptions taken for all three scenarios. This is done in Tables 4.3 and 4.4.

The estimates disclosed in Table 4.4 will be used in forecasting those few numbers that will be assumed to stay on the same levels under all three scenarios. They are presented in Table 4.5 and are based on the following underlying assumptions:

Table 4.3 Selected financial statement ratios of Volkswagen Group: their actual values in fiscal year 2008 and values assumed for fiscal year 2009 (based on the numbers shown in Tables 4.1 and 4.2, as well as the assumptions explained in Sect. 4.4)

Ratio and formula applied	Actual in fiscal year 2008	Assumed for fiscal year 2009 under			Basis for assumed values of ratios
		Scenario 1 (Sc. 1)	Scenario 2 (Sc. 2)	Scenario 3 (Sc. 3)	
(1) Gross margin on sales [= Gross profit/Sales revenues]	15.1% = 17,196/113,808	14.4% = 15.1% × 0.95	12.8% = 15.1% × 0.85	10.6% = 15.1% × 0.70	Margin falls by 5, 15, 30%, respectively
(2) SG&A costs/Sales revenues	11.7% = 13,294/113,808	12.3% = 11.7% × 1.05	12.8% = 11.7% × 1.10	14.0% = 11.7% × 1.20	Ratio rises by 5, 10, 20%, respectively
(3) Effective tax rate [= Income tax/Profit before tax]	29.1% = 1,920/6,608	29.1%	29.1%	29.1%	Effective tax rate is assumed to stay unchanged
(4) Noncurrent financial services receivables/Sales revenues	28.0% = 31,855/113,808	28.0% = 28.0% × 1.00	32.2% = 28.0% × 1.15	36.4% = 28.0% × 1.30	Ratio rises by 15% in Sc. 2 and 30% in Sc. 3
(5) Current receivables/Sales revenues	29.0% = 33,004/113,808	29.0% = 29.0% × 1.00	33.3% = 29.0% × 1.15	37.7% = 29.0% × 1.30	Ratio rises by 15% in Sc. 2 and 30% in Sc. 3
(6) Inventories/Cost of sales	18.4% = 17,816/96,612	18.4% = 18.4% × 1.00	22.1% = 18.4% × 1.20	25.8% = 18.4% × 1.40	Ratio rises by 20% in Sc. 2 and by 40% in Sc. 3
(7) Operating payables/(Cost of sales + SG&A costs – Depreciation and amortization)	60.2% = 61,151/(96,612 + 13,294 – 8,406)	60.2% = 60.2% × 1.00	66.3% = 60.2% × 1.10	72.3% = 60.2% × 1.20	Ratio rises by 10% in Sc. 2 and by 20% in Sc. 3

Source Annual report of Volkswagen Group for fiscal year 2008 and authorial computations

- Dividend paid out in a given year is independent on an after-tax income earned in that particular period, since it constitutes a distribution of prior year's profit. Accordingly, it will be assumed that in its fiscal year 2009 the Volkswagen Group's dividend payout ratio stays at 17.0% (as explained in Table 4.4).
- A ratio of depreciable and amortizable fixed assets to revenues, that increased in fiscal year 2008, will be assumed to increase further (but only moderately) in 2009.
- A forecast of carrying amount of depreciable and amortizable fixed assets will be based on the extrapolated sales revenues, amounting to 118,275 EUR million [= 113,808 EUR million as reported for fiscal year 2008 + 4,467 EUR million of a slope of a trend line displayed on Chart 4.1].

Table 4.4 Additional financial statement ratios of Volkswagen Group: their actual values in fiscal years 2007 and 2008 and values assumed for fiscal year 2009 (based on the numbers shown in Tables 4.1 and 4.2 as well as on some other annual report disclosures)

Ratio and formula applied	Actual in fiscal year 2007	Actual in fiscal year 2008	Assumed for fiscal year 2009	Basis for assumed values of ratios
(8) Dividend payout [= Dividend paid in a given year/Profit after tax in a preceding year]	18.1% = 497 /2,750	17.5% = 722/4,122	17.0%	Some continuation of a prior trend (between 2007 and 2008) has been assumed for fiscal year 2009
(9) Tangible and intangible noncurrent assets / Sales revenues	31.4% = 34,146/108,897	37.4% = 42,530/13,808	38.0%	Some continuation of a prior trend (between 2007 and 2008) has been assumed for fiscal year 2009
(10) Depreciation and amortization in a given year/Tangible and intangible noncurrent assets at the end of a previous year	25.7% = 9,058/35,224	24.6% = 8,406 /34,146	23.5%	Some continuation of a prior trend (between 2007 and 2008) has been assumed for fiscal year 2009

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

According to the estimates and assumptions presented in Table 4.5:

- In its fiscal year 2009, a dividend paid out by Volkswagen Group would amount to 797 EUR million (under all three considered scenarios of the company's economic environment).
- At the end of fiscal year 2009, a carrying amount of the Volkswagen Group's depreciable and amortizable noncurrent assets would amount to 44,945 EUR million (under all three investigated scenarios).
- In fiscal year 2009, a depreciation and amortization expense, charged by Volkswagen Group, would amount to 9,995 EUR million (under all three investigated scenarios).

Table 4.6 contains a preliminary (i.e. before further optional adjustments) prospective consolidated income statement of Volkswagen Group, simulated for its fiscal year 2009 and based on the assumptions taken under all three hypothetical scenarios. As may be seen, the company would stay profitable (on its operating as well as after-tax level) under Scenario 1, that assumes a relatively mild economic slowdown of a global economy. In contrast, under both alternative scenarios the

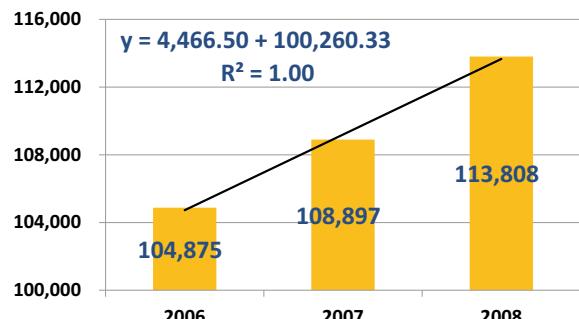
Table 4.5 Forecasts of Volkswagen Group's dividend paid, carrying amount of tangible and intangible noncurrent assets and depreciation and amortization expense in fiscal year 2009

Forecasted item	Driver of the forecasted item	Ratio used in a forecast	Amount forecasted for fiscal year 2009 (in EUR million)
Dividend paid in fiscal year 2009	Profit after tax in fiscal year 2008 (i.e. 4,688 EUR million), as shown in Table 4.1	Dividend payout of 17.0%, as shown in line (8) of Table 4.4	$797 = 17.0\% \times 4,688$
Tangible and intangible noncurrent assets at the end of fiscal year 2009	Sales revenues in fiscal year 2009, extrapolated on a basis of Chart 4.1 (i.e. 118,275 EUR million ^a)	Turnover ratio of 38.0%, as shown in line (9) of Table 4.4	$44,945 = 38.0\% \times 118,275$
Depreciation and amortization (D&A) in fiscal year 2009	Tangible and intangible noncurrent assets (excl. goodwill), at the end of fiscal year 2008 (i.e. 42,530 EUR million), as shown in Table 4.2	Ratio of D&A to depreciable and amortizable assets, of 23.5%, as shown in line (10) of Table 4.4	$9,995 = 23.5\% \times 42,530$

^aActual sales revenues in fiscal year 2008 (i.e. 113,808 EUR million, as shown in Table 4.1) + Slope parameter of the trend line shown on Chart 4.1 (i.e. 4,467 EUR million, after rounding to an integer)

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

Chart 4.1 Linear trend of Volkswagen Group's sales revenues (in EUR million) in fiscal years 2006–2008
(Source Annual reports of Volkswagen Group [for various fiscal years] and authorial computations)



company would be pushed below its break-even point and would incur financial losses.

Under Scenario 1 the Volkswagen Group's simulated profit before tax would stay positive, although lower by more than 90%, as compared to its actual amount reported for fiscal year 2008. Accordingly, under this particular set of underlying assumptions the company's still positive pre-tax income would be reduced by an income tax expense, amounting to 143 EUR million (consistent with the assumed

Table 4.6 Actual (in fiscal year 2008) and preliminary prospective (for fiscal year 2009) income statement of Volkswagen Group, under three hypothetical scenarios

In EUR million	Actual in 2008	Simulated for 2009 under			Basis for simulation
		Scenario 1	Scenario 2	Scenario 3	
(1) Sales revenue	113,808	108,118 = $113,808 \times 0.95$	96,737 = $113,808 \times 0.85$	79,666 = $113,808 \times 0.70$	<i>Revenues fall by 5, 15 and 30%, respectively</i>
(2) Cost of sales (CoGS)	96,612	92,549 = $108,118 - 15,569$	84,355 = $96,737 - 12,382$	71,221 = $79,666 - 8,445$	= Revenues (1) – Gross profit (3)
(3) Gross profit [= (1) – (2)]	17,196	15,569 = $108,118 \times 14.4\%$	12,382 = $96,737 \times 12.8\%$	8,445 = $79,666 \times 10.6\%$	= Revenues (1) × Gross margin on sales from line (1) in Table 4.3
(4) Selling, general and administrative costs (SG&A)	13,294	13,261 = $108,118 \times 12.3\%$	12,430 = $96,737 \times 12.8\%$	11,167 = $79,666 \times 14.0\%$	= Revenues (1) × Ratio of SG&A to sales from line (2) in Table 4.3
(5) Profit on sales [= (3) – (4)]	3,902	2,308 = $15,569 - 13,261$	-48 = 12,382 – 12,430	-2,722 = $8,445 - 11,167$	= Gross profit (3) – SG&A costs (4)
(6) Other operating income/expenses (net)	2,431	0	0	0	Assumptions explained in Sect. 4.4
(7) Operating profit [= (5) + (6)]	6,333	2,308 = $2,308 + 0$	-48 = -48 + 0	-2,722 = $-2,722 + 0$	= Profit on sales (5) + Other operating income/expense (6)
(8) Finance costs	1,815	1,815	1,815	1,815	Preliminary assumptions explained in Sect. 4.4
(9) Other financial gains/losses (net)	2,090	0	0	0	Preliminary assumptions explained in Sect. 4.4
(10) Profit before tax [= (7) – (8) + (9)]	6,608	493 = $2,308 - 1,815 + 0$	-1,863 = $-48 - 1,815 + 0$	-4,537 = $-2,722 - 1,815 + 0$	= Operating profit (7) – Finance costs (8) + Other financial gains/losses (9)

(continued)

Table 4.6 (continued)

In EUR million	Actual in 2008	Simulated for 2009 under			Basis for simulation
		Scenario 1	Scenario 2	Scenario 3	
(11) Income tax	1,920	143 = 493 × 29.1%	-542 = - 1,863 × 29.1%	-1,320 = -4,537 × 29.1%	= Profit before tax (10) × Effective tax rate from line (3) in Table 4.3
(12) Profit after tax [= (10) – (11)]	4,688	350 = 493 – 143	-1,321 = - 1,863 – (-542)	-3,217 = -4,537 – (-1,320)	= Profit before tax (10) – Income tax (11)

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

effective tax rate of 29.1%). As a result, the simulated profit after tax would be lower than profit before tax. In contrast, the pre-tax earnings simulated for both alternative scenarios have negative amounts. However, it does not mean that the reported income taxes should have zero amounts here, since the company could capitalize (as deferred tax assets) its available “tax shields”, stemming from its tax-loss carryforwards, i.e. possible future income tax reductions offered by tax losses incurred in prior periods. Accordingly, the negative pre-tax earnings simulated under those two scenarios imply negative amounts of income taxes (that reflect tax-loss carryforwards), with resulting after-tax losses being lower than pre-tax losses. Consistently with these assumptions, forecasted other noncurrent assets (item 1c in Table 4.7) include incremental deferred tax assets (tax-loss carryforwards), in the amounts equal to negative income taxes.

As may be concluded from Table 4.8, under the assumptions taken in the simulations described and displayed above, Volkswagen Group would face a necessity of bridging its funding gap (i.e. an excess of estimated amount of total assets over estimated amount of total equity and liabilities), under all three considered scenarios of the company’s economic environment in fiscal year 2009. The estimated funding gap seems quite moderate when a global economic growth stagnates (i.e. under Scenario 1), but gets much wider in recessionary times. The major reasons responsible for the identified funding gaps include:

- An erosion of a book value of the company’s equity (that under all three scenarios becomes lower than its carrying amount reported at the end of fiscal year 2008), as a product of negative after-tax earnings (except for Scenario 1) combined with continued dividend payouts.
- Reduced amounts of operating payables, driven down by operating expenses (which, in turn, are falling in tune with eroding sales revenues).
- “Sticky” amounts of total assets, that either fall only marginally (under Scenario 1 and Scenario 3) or even increase (under Scenario 2), mostly due to rising carrying amounts of tangible and intangible noncurrent assets, combined with stockpiling inventories (under both recessionary scenarios).

Table 4.7 Actual (in fiscal year 2008) and preliminary prospective (for fiscal year 2009) balance sheet of Volkswagen Group, under three hypothetical scenarios

In EUR million	Actual in 2008	Simulated for 2009 under			Basis for simulation
		Scenario 1	Scenario 2	Scenario 3	
(1) Noncurrent assets, including:	91,756	92,578	93,996	92,624	$= (1a) + (1b) + (1c)$
(1a) Tangible and intangible noncurrent assets (excl. goodwill)	42,530	$44,945 = 118,275 \times 38.0\%$	$44,945 = 118,275 \times 38.0\%$	$44,945 = 118,275 \times 38.0\%$	$= \text{Extrapolated revenues (Table 4.5)} \times \text{Assumed turnover ratio from line (9) in Table 4.4}$
(1b) Financial services receivables	31,855	$30,262 = 108,118 \times 28.0\%$	$31,138 = 96,737 \times 32.2\%$	$28,988 = 79,666 \times 36.4\%$	$= \text{Revenues (Table 4.6)} \times \text{Assumed ratio from line (4) in Table 4.3}$
(1c) Other noncurrent assets (incl. goodwill)	17,371	$17,371 = 17,371 + 0$	$17,913 = 17,371 + 542$	$18,691 = 17,371 + 1,320$	$= \text{Actual for 2008} + \text{Tax-loss carryforwards, i.e. negative income tax from line (11) in Table 4.6}$
(2) Current assets, including:	76,163	73,764	76,271	73,764	$= (2a) + (2b) + (2c)$
(2a) Inventories	17,816	$17,067 = 92,549 \times 18.4\%$	$18,667 = 84,355 \times 22.1\%$	$18,387 = 71,221 \times 25.8\%$	$= \text{CoGS (Table 4.6)} \times \text{Assumed ratio from line (6) in Table 4.3}$
(2b) Current receivables	33,004	$31,354 = 108,118 \times 29.0\%$	$32,261 = 96,737 \times 33.3\%$	$30,034 = 79,666 \times 37.3\%$	$= \text{Revenues (Table 4.6)} \times \text{Assumed ratio from line (5) in Table 4.3}$
(2c) Cash and other current assets	25,343	25,343	25,343	25,343	Preliminary assumptions explained in Sect. 4.4
(3) Total Assets [= (1) + (2)]	167,919	166,342	170,267	166,388	$= \text{Noncurrent assets (1)} + \text{Current assets (2)}$
(4) Equity	37,388	36,941 = 37,388 + 350 - 797	35,270 = 37,388 - 1,321 - 797	33,374 = 37,388 - 3,217 - 797	$= \text{Equity 2008} + \text{Profit after tax (Table 4.6)} - \text{Dividend paid (Table 4.5)}$
(5) Total liabilities, including:	130,531	127,061	126,922	121,720	$= (5a) + (5b)$
(5a) Operating payables	61,151	$57,681 = (92,549 + 13,261 - 9,995) \times 60.2\%$	$57,542 = (84,355 + 12,430 - 9,995) \times 66.3\%$	$52,340 = (71,221 + 11,167 - 9,995) \times 72.3\%$	$= [\text{CoGS (Table 4.6)} + \text{SG&A (Table 4.5)} - \text{D&A (Table 4.5)}] \times \text{Assumed ratio from line (7) in Table 4.3}$

(continued)

Table 4.7 (continued)

In EUR million	Actual in 2008	Simulated for 2009 under			Basis for simulation
		Scenario 1	Scenario 2	Scenario 3	
(5b) Financial liabilities (borrowings)	69,380	69,380	69,380	69,380	Preliminary assumptions explained in Sect. 4.4
(6) Total equity and liabilities [= (4) + (5)]	167,919	164,002	162,192	155,094	= Equity (4) + Total liabilities (5)

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

Table 4.8 Actual (in fiscal year 2008) and prospective (for fiscal year 2009) amount of funding gap/excess funds of Volkswagen Group, under three hypothetical scenarios

In EUR million	Actual in 2008	Simulated for 2009 under			Source
		Scenario 1	Scenario 2	Scenario 3	
(1) Total assets	167,919	166,342	170,267	166,388	<i>Line (3) in Table 4.7</i>
(2) Total equity and liabilities	167,919	164,002	162,192	155,094	<i>Line (6) in Table 4.7</i>
(3) Funding gap (+)/excess funds (-) [= (1) - (2)]	-	2,340	8,075	11,294	= Total assets (1) - Total equity and liabilities (2)

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

Such detected funding gaps must be bridged in some way, for instance with one of the following approaches (or a combination of them):

- By reducing the company's balance of liquid financial assets (i.e. cash and cash equivalents, combined with any marketable financial assets such as bonds, shares in other entities, etc.), if their total market value exceeds an estimated amount of the funding gap.
- By increasing the company's equity base, through an issuance of new shares (that boosts an amount of paid-in capital), if arranging such a share issuance relatively quickly is possible and economically viable.
- By increasing an amount of the company's financial debts (borrowings), if its financial standing remains sound enough to attract lenders (e.g. banks of corporate bonds investors) willing to pour more loans to the company.
- By undertaking some other activities that may either reduce an amount of money tied up in the company's operating assets (e.g. sale-and-lease-back transactions on some elements of property, plant and equipment or factoring sales of receivable accounts) and/or may boost its available amount of total equity and liabilities (e.g. a transitory suspension of dividend payouts).

It must be noted that bridging the uncovered funding gap may call for a blend of various available approaches, e.g. an erosion of cash holdings (down to some assumed liquidity threshold) combined with an issuance of new shares and/or new borrowings. Designing an optimal solution constitutes one of responsibilities of a given firm's managing board (with a leading role of its chief financial officer), but often requires formal approvals by either the company's shareholders (in case of an issuance of new shares) or by its supervisory board (in case of new significant borrowings or disposals of material assets).

When a prospective financial statement analysis suggests that an excess of funds (rather than the funding gap), i.e. a surplus of an available amount of equity and liabilities over carrying amount of total assets, should be expected, then a given company may consider one (or few) of the following options:

- Accumulating the excess funds on an asset side of its balance sheet, e.g. by depositing them on bank accounts or by investing them in some portfolio of liquid non-operating assets (e.g. government bonds), so that they remain available for possible future “rainy days”.
- Distributing the accumulated excess funds to shareholders, e.g. in the form of a special dividend or share buybacks.
- Spending the excess funds on early repayments of the company's interest-bearing liabilities (borrowings), to make it less indebted.
- Strengthening the company's competitive position, by investing its expected excess funds into some operating assets that may boost its future earnings and strategic advantages (e.g. by extending deferred payment terms offered to customers, which ties up money in receivable accounts but may attract new customers and make the old ones more loyal to the company).

In the following three sections, the Volkswagen Group's funding gaps, displayed in Table 4.8, will be bridged by (i) reducing the company's available cash holdings (combined with current financial assets), (ii) increasing its equity base and (iii) increasing the amounts of its financial debts (borrowings) owed to creditors.

4.6 Equalizing Left-Hand Side and Right-Hand Side of Balance Sheet

4.6.1 Closing Balance Sheet Gap via Cash and Current Financial Assets

Table 4.9 presents the Volkswagen Group's prospective balance sheet, simulated for the end of fiscal year 2009, after equalizing total carrying amounts of its both sides (i.e. after bridging the estimated funding gaps) via a reduction of the company's balances of cash and other current liquid assets. In this channel of closing a balance sheet gap, the prospective income statement stays intact, i.e. the same as displayed in Table 4.6. Accordingly, Table 4.9 contains only the Volkswagen

Table 4.9 Condensed actual (in fiscal year 2008) and prospective (for fiscal year 2009) balance sheet of Volkswagen Group, under three hypothetical scenarios, after equalizing both its sides via cash and other current assets

In EUR million	Actual in 2008	Simulated for 2009 under			Source of numbers simulated for 2009
		Scenario 1	Scenario 2	Scenario 3	
(1) Noncurrent assets	91,756	92,578	93,996	92,624	<i>Line (1) in Table 4.7</i>
(2) Current assets, including:	76,163	71,424 = 73,764 – 2,340	68,196 = 76,271 – 8,075	62,470 = 73,764 – 11,294	<i>= Amounts from line (2) in Table 4.7 – Amounts of adjustments from line (3) in Table 4.8</i>
(2c) Cash and other current assets	25,343	23,003 = 25,343 – 2,340	17,810 = 25,343 – 8,075	15,369 = 25,343 – 11,294	<i>= Amounts from line (2c) in Table 4.7 – Amounts of adjustments from line (3) in Table 4.8</i>
(3) Total assets [= (1) + (2)]	167,919	164,002	162,192	155,094	<i>= Noncurrent assets (1) + Current assets (2)</i>
(4) Equity	37,388	36,941	35,270	33,374	<i>Line (4) in Table 4.7</i>
(5) Total liabilities	130,531	127,061	126,922	121,720	<i>Line (5) in Table 4.7</i>
(6) Total equity and liabilities [= (4) + (5)]	167,919	164,002	162,192	155,094	<i>Line (6) in Table 4.7</i>

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

Group's revised prospective balance sheet. It must be noted, however, that such a treatment of the preliminary income statement (i.e. keeping it unchanged) may entail an oversimplification when an investigated company generates a significant financial income from its financial assets (since in such a case the reduced balances of the latter would also erode the amounts of the former, that in turn would depress the entity's forecasted pre-tax and after-tax earnings).

As may be inferred from line (2c) of Table 4.9, under all three considered scenarios Volkswagen Group would retain material balances of its cash and other current assets. Although their carrying amounts would be diminished noticeably (particularly under Scenario 3), they would still constitute a significant component of the company's total consolidated assets (about 10% or more) that ensures an adequate financial liquidity. Accordingly, it may be concluded that under all three examined scenarios of an economic environment in fiscal year 2009, Volkswagen

Group would be able to remain financially sustainable (and solvent), even without issuing any new equity capital, as well as without increasing an amount of its financial (interest-bearing) liabilities.

4.6.2 Closing Balance Sheet Gap via an Issuance of New Equity

In the preceding section, the uncovered funding gaps have been bridged via a reduction of the company's cash balances (combined with its other current financial assets). Such an approach affected a left-hand side of the balance sheet (by reducing cash holdings and correspondingly total assets), without any impact on its right-hand side. In contrast, when an estimated funding gap is bridged via an issuance of new equity shares (i.e. by increasing an amount of paid-in capital within the shareholders' equity), then the left-hand side of the preliminary balance sheet remains intact, while a total amount of equity and liabilities goes up. However, similarly as in the case of a cash-based approach to equalize both sides of the balance sheet, also here the preliminary income statement typically remains unchanged (unless a given enterprise is assumed to obtain such sizeable proceeds from an issuance of its new shares that its financial income is expected to rise).

A major economic difference between those two approaches boils down to their varying impacts on corporate liquidity and indebtedness. While closing the balance sheet via reduced amounts of cash and current financial assets erodes liquidity and increases indebtedness (i.e. a share of liabilities in total assets), an issuance of new shares boosts an equity base (and protects cash balances from falling) and consequently reduces a weight of liabilities within a capital structure. However, a potentially negative side-effect of the new equity issuance, from incumbent shareholders' perspective, lies in a significant dilution of their equity interests, i.e. an erosion of their share in a given entity's total equity. A scope of such a dilution effect is positively correlated with an amount of the new equity issued. Accordingly, the larger the funding gap (to be bridged via an issuance of new shares), the deeper will be a shift in a given firm's ownership structure (unless the incumbent shareholders participate in the new equity issuance).

Table 4.10 presents the Volkswagen Group's prospective balance sheet, for the end of fiscal year 2009, after equalizing both its sides (i.e. after bridging the estimated funding gaps) via an issuance of its new equity shares.

According to the Volkswagen Group's annual report for fiscal year 2009, at the end of that period its actual market capitalization amounted to 29.6 EUR billion (down from 77.7 EUR billion a year before). Accordingly, a hypothetical issuance of its new equity shares, in an amount of 2.3 EUR billion (as assumed under Scenario 1), would probably dilute an ownership of the company's incumbent shareholders by no more than 10–15%. However, a dilution effect might be much more severe under both alternative scenarios, particularly under Scenario 3 (where an amount of proceeds from the newly issued shares could exceed one-third of the company's actual market capitalization, as at the end of fiscal year 2009).

Table 4.10 Condensed actual (in fiscal year 2008) and prospective (for fiscal year 2009) balance sheet of Volkswagen Group, under three hypothetical scenarios, after equalizing both its sides via an issuance of new equity shares

In EUR million	Actual in 2008	Simulated for 2009 under			Source of numbers simulated for 2009
		Scenario 1	Scenario 2	Scenario 3	
(1) Noncurrent assets	91,756	92,578	93,996	92,624	<i>Line (1) in Table 4.7</i>
(2) Current assets	76,163	73,764	76,271	73,764	<i>Line (2) in Table 4.7</i>
(3) Total assets [= (1) + (2)]	167,919	166,342	170,267	166,388	<i>Line (3) in Table 4.7</i>
(4) Equity	37,388	39,281 = 36,941 + 2,340	43,345 = 35,270 + 8,075	44,668 = 33,374 + 11,294	<i>= Amounts from line (4) in Table 4.7 + Amounts of adjustments from line (3) in Table 4.8</i>
(5) Total liabilities	130,531	127,061	126,922	121,720	<i>Line (5) in Table 4.7</i>
(6) Total equity and liabilities [= (4) + (5)]	167,919	166,342	170,267	166,388	<i>= Equity (4) + Total liabilities (5)</i>

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

It must be also kept in mind that the abovementioned actual market capitalization of the Volkswagen Group's equity (i.e. 29.6 EUR billion) reflected its actual performance in fiscal year 2009, for which the company reported a consolidated operating profit of 1,855 EUR million and a profit after tax amounting to 911 EUR million. Accordingly, with the hypothetical financial results assumed under our three examined scenarios (featured by a much poorer profitability than actually performed in 2009), the company's market capitalization would probably fall below its actual value of 29.6 EUR billion. That, in turn, would entail a deeper dilution of the equity interests of the company's incumbent shareholders (in case of the issuance of its new shares).

4.6.3 Closing Balance Sheet Gap via Financial Liabilities (Borrowings)

As could have been seen in the preceding two sections of this chapter, equalizing both sides of a preliminary balance sheet through cash balances (combined with current financial assets), as well as via shareholders' equity, was feasible without any revisions of a preliminary income statement. That was possible because it

was assumed that shifting amounts of liquid current assets, as well as equity, do not entail any material changes in financial income and financial expenses. In contrast, when a detected funding gap (or an excess of funds) is closed via financial liabilities (borrowings), then such an independence of the income statement on the adjusted balance sheet is no longer observed. This is due to a reciprocal (circular) connections between financial expenses in the income statement and the amount of interest-bearing debts in the balance sheet. Those mutual interrelationships may be summarized as follows:

- An amount of financial expenses assumed in the preliminary income statement affects an amount of pre-tax and after-tax earnings, that in turn impact a carrying amount of equity in the preliminary balance sheet.
- A preliminary amount of equity, calculated in such a way and combined with a preliminary amount of financial debts (borrowings), determines an obtained amount of the funding gap (or excess of funds).
- When the estimated funding gap (or excess of funds) is bridged through an increase (or decrease) in an amount of borrowings, then also the amount of financial expenses in the income statement should change, since it is a product of a given firm's borrowing costs (i.e. an interest rate on debts) and a balance of its financial liabilities.
- A changing amount of financial expenses (as a result of shifting balances of borrowings) will in turn impact corporate pre-tax and after-tax earnings, and as a result also an estimated amount of equity (that no longer will be the same as in the preliminary balance sheet), with a new amount of the funding gap (or excess of funds) emerging.
- Accordingly, both primary financial statements impact each other circularly, since the amount of financial expenses affects earnings, equity and the funding gap (or excess of funds), while bridging the latter by adjusting the amount of financial debts (borrowings) changes financial expenses, earnings and equity (resulting in a new amount of the funding gap or the excess of funds).

Consequently, when an uncovered gap between total amounts of both sides of the prospective balance sheet is bridged via changing amount of financial (interest-bearing) liabilities, then an ultimate result (in which both sides have equal total amounts) must be arrived at in an iterative way. Luckily, as will be demonstrated below, usually only few iterations (typically three or four) are needed to converge both sides of the prospective balance sheet.

To make the following calculations easier to trace, a simplifying assumption will be taken, according to which an amount of financial expenses in the income statement will constitute a product of an assumed borrowing cost (i.e. an interest rate on debts) and an ending balance of financial debts (borrowings). In practice, typically the average amounts of interest-bearing liabilities (i.e. arithmetic means of their values as at the beginning and the end of a given period) are used as drivers of financial expenses. Such an average-based approach offers a somewhat higher precision, but a simplification applied below should not distort the obtained results

materially (since anyway all of this boils down to estimates, instead of precise engineering computations).

An additional parameter, that needs to be assumed before our further analysis, relates to an investigated firm's borrowing cost (i.e. an interest rate charged on its financial debts). There are several estimation approaches available (including an analysis of statistical relationships between financial statement ratios, credit ratings and costs of corporate debts), but one of the simplest ones will be followed here. Namely, the firm's pre-tax cost of debt will be assumed to remain on the same level as in its most recent fiscal years. In the Volkswagen Group's case, it may be estimated by dividing the company's finance costs, as displayed in line (8) of Table 4.1, by its total financial liabilities, as disclosed in line (5b) of Table 4.2. In fiscal years 2007 and 2008 the reported values of the former amounted to 1,647 EUR million and 1,815 EUR million, respectively. At the ends of the same periods the balances of the Volkswagen Group's interest-bearing debts amounted to 57,992 EUR million and 69,380 EUR million, respectively. Accordingly, the company's estimated pre-tax cost of debt stood at 2.8% [= 1,647/57,992] in fiscal year 2007 and 2.6% [= 1,815/69,380] in fiscal year 2008. Its latter value (i.e. 2.6%) will be assumed in our further analysis, with some caveats elaborated in a final paragraph of this section.

In the last columns of all tables presented below the following abbreviations will be used:

- **EBIT** will denote operating profit (i.e. earnings before interest and taxes).
- **FC** will denote finance costs (i.e. cost of debt).
- **PBT** will denote profit before tax (i.e. pre-tax earnings).
- **IT** will denote income tax expense.
- **PAT** will denote profit after tax (i.e. after-tax or net earnings).
- **TA** will denote total assets.
- **E** will denote equity.
- **L** will denote total liabilities.
- **OP** will denote operating payables.
- **FL** will denote financial liabilities (borrowings).
- **E&L** will denote total equity and liabilities.

Five tables shown below present our starting financial statements (with assumed zero amounts of debts and financial costs), as well as four sequential iterations that must have been gone through on a journey to an ultimate prospective balance sheet (as well as prospective income statement), in which both sides have equal totals, as shown in Table 4.15. The individual steps of bridging the gap in the Volkswagen Group's prospective balance sheet, via borrowings, look as follows:

- Table 4.11 contains a starting prospective income statement and balance sheet, in which financial liabilities (as well as related finance expenses) have been preliminarily assumed at zero amounts. It must be noted that profit after tax, as

Table 4.11 Hypothetical prospective (for fiscal year 2009) debt-free income statement and balance sheet of Volkswagen Group under three hypothetical scenarios

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Prospective condensed income statement				
Operating profit (EBIT)	2,308	-48	-2,722	<i>Line (7) in Table 4.6</i>
Finance costs (FC)	-	-	-	<i>Preliminary assumption of zero amounts</i>
Profit before tax (PBT)	2,308	-48	-2,722	$= (EBIT) - (FC)$
Income tax (IT)	672	-14	-792	$= PBT \times Tax rate of 29.1\%$
Profit after tax (PAT)	1,636	-34	-1,930	$= (PBT) - (IT)$
Prospective condensed balance sheet				
Noncurrent assets, including:	92,578	93,468	92,096	
<i>Tangible and intangible noncurrent assets (excl. goodwill)</i>	44,945	44,945	44,945	<i>Line (1a) in Table 4.7</i>
<i>Financial services receivables</i>	30,262	31,138	28,988	<i>Line (1b) in Table 4.7</i>
<i>Other noncurrent assets (incl. goodwill)</i>	$17,371 = 17,371 + 0$	$17,385 = 17,371 + 14$	$18,163 = 17,371 + 792$	$= Actual for 2008 + Tax-loss carryforwards, i.e. negative income tax$
Current assets	73,764	76,271	73,764	<i>Line (2) in Table 4.7</i>
Total assets (TA)	166,342	169,739	165,860	$= Noncurrent assets (1) + Current assets (2)$

(continued)

Table 4.11 (continued)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Equity (E)	$38,227 = 37,388 + 1,636 - 797$	$36,557 = 37,388 - 34 - 797$	$34,661 = 37,388 - 1,930 - 797$	= Equity 2008 (37,388) + Profit after tax (PAT) – Dividend paid (797)
Total liabilities (L), including:	57,681	57,542	52,340	= (OP) + (FL)
<i>Operating payables (OP)</i>	57,681	57,542	52,340	Line (5a) in Table 4.7
<i>Financial liabilities (FL)</i>	–	–	–	Preliminary assumption of zero amount of borrowings
Total equity and liabilities (E&L)	95,908	94,099	87,001	= Equity (E) + Total liabilities (L)
Funding gap (+)/Excess funds (–) [= (TA) – (E&L)]	70,434 = 166,342 – 95,908	75,640 = 169,739 – 94,099	78,859 = 165,860 – 87,001	= Total assets (TA) – Total equity and liabilities (E&L)

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

well as year-end carrying amount of equity, is different here from their respective values disclosed in Table 4.6, due to our preliminary assumption of zero amounts of financial expenses (as a result of a beginning zero debt balance).

- In the first iteration, amounts of the funding gap, computed at the bottom of Table 4.11, are entered into a line “*Financial liabilities (FC)*” in Table 4.12. Then, based on them, the amounts of “*Finance costs (FC)*” are calculated in the same table, with an assumed pre-tax cost of debt (an interest rate) of 2.6%.
- In the second iteration, in Table 4.13, the revised (reduced) amounts of the funding gap, computed at the bottom of Table 4.12, are added to numbers previously entered into the line “*Financial liabilities (FC)*” (in Table 4.12). Then, based on them, the revised amounts of “*Finance costs (FC)*” are calculated.
- In the third iteration, in Table 4.14, the revised (further reduced) amounts of the funding gap, computed at the bottom of Table 4.13, are added to numbers previously entered into the line “*Financial liabilities (FC)*” (in Table 4.13). Then, based on them, the revised amounts of “*Finance costs (FC)*” are obtained.
- In the fourth (final) iteration both sides of our prospective balance sheet are ultimately equalized, as shown at the bottom of Table 4.15.

Table 4.12 Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the first iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Prospective condensed income statement				
Operating profit (EBIT)	2,308	-48	-2,722	<i>Line (7) in Table 4.6</i>
Finance costs (FC)	$1,831 = 2.6\% \times 70,434$	$1,967 = 2.6\% \times 75,640$	$2,050 = 2.6\% \times 78,859$	= Assumed interest rate of 2.6% \times Ending balance of financial liabilities (FL)
Profit before tax (PBT)	477	-2,015	-4,772	$= (EBIT) - (FC)$
Income tax (IT)	139	-586	-1,389	$= PBT \times Tax rate of 29.1\%$
Profit after tax (PAT)	338	-1,429	-3,383	$= (PBT) - (IT)$
Prospective condensed balance sheet				
Noncurrent assets, including:	92,578	94,040	92,693	
<i>Tangible and intangible noncurrent assets (excl. goodwill)</i>	44,945	44,945	44,945	<i>Line (1a) in Table 4.7</i>
<i>Financial services receivables</i>	30,262	31,138	28,988	<i>Line (1b) in Table 4.7</i>
<i>Other noncurrent assets (incl. goodwill)</i>	$17,371 = 17,371 + 0$	$17,957 = 17,371 + 586$	$18,760 = 17,371 + 1,389$	= Actual for 2008 + Tax-loss carryforwards, i.e. negative income tax
Current assets	73,764	76,271	73,764	<i>Line (2) in Table 4.7</i>
Total assets (TA)	166,342	170,311	166,457	$= Noncurrent assets (1) + Current assets (2)$

(continued)

Table 4.12 (continued)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Equity (E)	36,929 $= 37,388 + 338 - 797$	35,162 $= 37,388 - 1,429 - 797$	33,208 $= 37,388 - 3,383 - 797$	$= \text{Equity } 2008 (37,388) + \text{Profit after tax (PAT)} - \text{Dividend paid (797)}$
Total liabilities (L), including:	128,115	133,182	131,199	$= (\text{OP}) + (\text{FL})$
<i>Operating payables (OP)</i>	57,681	57,542	52,340	<i>Line (5a) in Table 4.7</i>
<i>Financial liabilities (FL)</i>	70,434	75,640	78,859	<i>Last row in Table 4.11</i>
Total equity and liabilities (E&L)	165,044	168,344	164,407	$= \text{Equity (E)} + \text{Total liabilities (L)}$
Funding gap (+)/Excess funds (-) [= (TA) - (E&L)]	1,298 $= 166,342 - 165,044$	1,967 $= 170,311 - 168,344$	2,050 $= 166,457 - 164,407$	$= \text{Total assets (TA)} - \text{Total equity and liabilities (E&L)}$

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

As may be seen, after all four sequential iterations the financial liabilities (borrowings) on the right-hand side of the prospective balance sheet have amounts exactly needed to eliminate any funding gap. They also retain a consistency with amounts of finance costs (calculated as 2.6% of year-end balance of the financial liabilities), included in a calculation of profit after tax, as well as in a calculation of year-end carrying amount of shareholders' equity.

The following conclusions may be inferred from Table 4.15.

- Bridging the funding gap via increased borrowings boosts a scope of the company's indebtedness significantly, particularly under Scenario 3, where an amount of total liabilities rises to 133,304 EUR million (as compared to 121,720 EUR million when both sides of the balance sheet are closed either via reduction of cash holdings or via an issuance of new equity shares).
- An increased amount of financial liabilities boosts a monetary amount of the company's finance costs, with a resulting erosion of its after-tax earnings and equity (as compared to both alternative ways of bridging the funding gap).

Table 4.13 Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the second iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Prospective condensed income statement				
Operating profit (EBIT)	2,308	-48	-2,722	<i>Line (7) in Table 4.6</i>
Finance costs (FC)	$1,865 = 2.6\% \times 71,732$	$2,018 = 2.6\% \times 77,607$	$2,104 = 2.6\% \times 80,909$	= Assumed interest rate of 2.6% \times Ending balance of financial liabilities (FL)
Profit before tax (PBT)	443	-2,066	-4,826	= (EBIT) - (FC)
Income tax (IT)	129	-601	-1,404	= PBT \times Tax rate of 29.1%
Profit after tax (PAT)	314	-1,465	-3,422	= (PBT) - (IT)
Prospective condensed balance sheet				
Noncurrent assets, including:	92,578	94,055	92,708	
<i>Tangible and intangible noncurrent assets (excl. goodwill)</i>	44,945	44,945	44,945	<i>Line (1a) in Table 4.7</i>
<i>Financial services receivables</i>	30,262	31,138	28,988	<i>Line (1b) in Table 4.7</i>
<i>Other noncurrent assets (incl. goodwill)</i>	$17,371 = 17,371 + 0$	$17,972 = 17,371 + 601$	18,775 $= 17,371 + 1,404$	= Actual for 2008 + Tax-loss carryforwards, i.e. negative income tax
Current assets	73,764	76,271	73,764	<i>Line (2) in Table 4.7</i>
Total assets (TA)	166,342	170,326	166,472	= Noncurrent assets (1) + Current assets (2)

(continued)

Table 4.13 (continued)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Equity (E)	$36,905 = 37,388 + 314 - 797$	$35,126 = 37,388 - 1,465 - 797$	$33,169 = 37,388 - 3,422 - 797$	= <i>Equity 2008 (37,388) + Profit after tax (PAT) – Dividend paid (797)</i>
Total liabilities (L), including:	129,413	135,149	133,249	= (OP) + (FL)
<i>Operating payables (OP)</i>	57,681	57,542	52,340	<i>Line (5a) in Table 4.7</i>
<i>Financial liabilities (FL)</i>	$71,732 = 70,434 + 1,298$	$77,607 = 75,640 + 1,967$	$80,909 = 78,859 + 2,050$	<i>Last row in Table 4.11 + Last row in Table 4.12</i>
Total equity and liabilities (E&L)	166,318	170,275	166,418	= <i>Equity (E) + Total liabilities (L)</i>
Funding gap (+)/Excess funds (-) [= (TA) – (E&L)]	24 = 166,342 – 166,318	51 = 170,326 – 170,275	54 = 166,472 – 166,418	= <i>Total assets (TA) – Total equity and liabilities (E&L)</i>

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

Finally, it must be noted that all estimates shown in this section are based on a rather simplistic assumption, according to which an investigated company's average borrowing cost (i.e. an interest rate charged on its debts) remains intact in a period covered by our prospective analysis, regardless of the company's financial performance. In all our simulations, an amount of Volkswagen Group's finance costs has been calculated as a product of its estimated amount of borrowings and an assumed constant interest rate of 2.6% (consistent with the company's estimated borrowing costs in fiscal year 2008). In reality, as the company's financial standing deteriorates (due to its expected losses), its credit risk increases. This, in turn, would imply a rising cost of debt (to compensate lenders for the company's higher credit risk).

Table 4.14 Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the third iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Prospective condensed income statement				
Operating profit (EBIT)	2,308	-48	-2,722	<i>Line (7) in Table 4.6</i>
Finance costs (FC)	1,866 $= 2.6\% \times 71,756$	2,019 $= 2.6\% \times 77,658$	2,105 $= 2.6\% \times 80,963$	$= \text{Assumed interest rate of } 2.6\% \times \text{Ending balance of financial liabilities (FL)}$
Profit before tax (PBT)	442	-2,067	-4,827	$= (EBIT) - (FC)$
Income tax (IT)	129	-601	-1,405	$= PBT \times \text{Tax rate of } 29.1\%$
Profit after tax (PAT)	313	-1,466	-3,422	$= (PBT) - (IT)$
Prospective condensed balance sheet				
Noncurrent assets, including:	92,578	94,055	92,709	
<i>Tangible and intangible noncurrent assets (excl. goodwill)</i>	44,945	44,945	44,945	<i>Line (1a) in Table 4.7</i>
<i>Financial services receivables</i>	30,262	31,138	28,988	<i>Line (1b) in Table 4.7</i>
<i>Other noncurrent assets (incl. goodwill)</i>	$17,371 = 17,371 + 0$	$17,972 = 17,371 + 601$	$18,776 = 17,371 + 1,405$	$= \text{Actual for 2008} + \text{Tax-loss carryforwards, i.e. negative income tax}$
Current assets	73,764	76,271	73,764	<i>Line (2) in Table 4.7</i>
Total assets (TA)	166,342	170,326	166,473	$= \text{Noncurrent assets (1)} + \text{Current assets (2)}$
Equity (E)	$36,904 = 37,388 + 313 - 797$	$35,125 = 37,388 - 1,466 - 797$	$33,169 = 37,388 - 3,422 - 797$	$= \text{Equity 2008 } (37,388) + \text{Profit after tax (PAT)} - \text{Dividend paid } (797)$

(continued)

Table 4.14 (continued)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Total liabilities (L), including:	129,437	135,200	133,303	= (OP) + (FL)
<i>Operating payables (OP)</i>	57,681	57,542	52,340	<i>Line (5a) in Table 4.7</i>
<i>Financial liabilities (FL)</i>	71,756 = 70,434 + 1,298 + 24	77,658 = 75,640 + 1,967 + 51	80,963 = 78,859 + 2,050 + 54	<i>Last row in Table 4.11 + Last row in Table 4.12 + Last row in Table 4.13</i>
Total equity and liabilities (E&L)	166,341	170,325	166,472	= Equity (E) + Total liabilities (L)
Funding gap (+)/Excess funds (-) [= (TA) - (E&L)]	1 = 166,342 - 166,341	1 = 170,326 - 170,325	1 = 166,473 - 166,472	= Total assets (TA) - Total equity and liabilities (E&L)

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

4.7 Impact of Considered Scenarios on Prospective Financial Statement Ratios

Once prospective financial statements are prepared, they may be used in a prospective analysis of some key accounting ratios. One of the purposes of such a future-oriented investigation is to identify some potentially problematic areas, e.g. a possibility of losing a financial liquidity or violating some bank loan covenants. From corporate managers perspective an early detection of such upcoming “dark clouds” may enable a timely reaction, by undertaking some necessary countermeasures. In contrast, external users of financial statements may obtain some valuable insights about a likely direction of an investigated company’s future performance.

Table 4.16 contains selected financial statement ratios of Volkswagen Group, computed on the basis of our prospective accounting numbers, presented in tables displayed in the preceding section of this chapter. The following formulas have been applied in calculating those performance metrics:

- **Operating profitability** = Operating profit (EBIT) in a period/Sales revenues in the same period.
- **Return on equity (ROE)** = Profit after tax in a period/Carrying amount of the equity at the end of the same period.
- **Total indebtedness** = Carrying amount of total liabilities at the end of the period/Carrying amount of total assets at the end of the same period.
- **EBITDA to total liabilities** = (Operating profit in a period + Depreciation and amortization in the same period)/Carrying amount of total liabilities at the end of the same period.

Table 4.15 Hypothetical prospective (for fiscal year 2009) income statement and balance sheet of Volkswagen Group under three hypothetical scenarios: the fourth (final) iteration in bridging the funding gap in balance sheet by financial liabilities (borrowings)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Prospective condensed income statement				
Operating profit (EBIT)	2,308	-48	-2,722	<i>Line (7) in Table 4.6</i>
Finance costs (FC)	$1,866 = 2.6\% \times 71,757$	$2,019 = 2.6\% \times 77,659$	$2,105 = 2.6\% \times 80,964$	= Assumed interest rate of 2.6% \times Ending balance of financial liabilities (FL)
Profit before tax (PBT)	442	-2,067	-4,827	= (EBIT) - (FC)
Income tax (IT)	129	-601	-1,405	= PBT \times Tax rate of 29.1%
Profit after tax (PAT)	313	-1,466	-3,422	= (PBT) - (IT)
Prospective condensed balance sheet				
Noncurrent assets, including:	92,578	94,055	92,709	
<i>Tangible and intangible noncurrent assets (excl. goodwill)</i>	44,945	44,945	44,945	<i>Line (1a) in Table 4.7</i>
<i>Financial services receivables</i>	30,262	31,138	28,988	<i>Line (1b) in Table 4.7</i>
<i>Other noncurrent assets (incl. goodwill)</i>	$17,371 = 17,371 + 0$	$17,972 = 17,371 + 601$	$18,776 = 17,371 + 1,405$	= Actual for 2008 + Tax-loss carryforwards, i.e. negative income tax
Current assets	73,764	76,271	73,764	<i>Line (2) in Table 4.7</i>
Total assets (TA)	166,342	170,326	166,473	= Noncurrent assets (1) + Current assets (2)

(continued)

Table 4.15 (continued)

In EUR million	Simulated for 2009 under			Source of numbers simulated for 2009
	Scenario 1	Scenario 2	Scenario 3	
Equity (E)	$36,904 = 37,388 + 313 - 797$	$35,125 = 37,388 - 1,466 - 797$	$33,169 = 37,388 - 3,422 - 797$	= <i>Equity 2008 (37,388) + Profit after tax (PAT) – Dividend paid (797)</i>
Total liabilities (L), including:	129,438	135,201	133,304	= <i>(OP) + (FL)</i>
<i>Operating payables (OP)</i>	57,681	57,542	52,340	<i>Line (5a) in Table 4.7</i>
<i>Financial liabilities (FL)</i>	$71,757 = 70,434 + 1,298 + 24 + 1$	$77,659 = 75,640 + 1,967 + 51 + 1$	$80,964 = 78,859 + 2,050 + 54 + 1$	<i>Last row in Table 4.11 + Last row in Table 4.12 + Last row in Table 4.13 + Last row in Table 4.14</i>
Total equity and liabilities (E&L)	166,342	170,326	166,473	= <i>Equity (E) + Total liabilities (L)</i>
Funding gap (+)/Excess funds (-) [= (TA) – (E&L)]	0 = 166,342 – 166,342	0 = 170,326 – 170,326	0 = 166,473 – 166,473	= <i>Total assets (TA) – Total equity and liabilities (E&L)</i>

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

A quick look at the numbers disclosed in Table 4.16 leads to the following conclusions:

- Regardless of the way of bridging its funding gap, under all three assumed hypothetical scenarios of its economic environment the Volkswagen Group's profitability and ROE would fall significantly in fiscal year 2009, particularly under Scenario 3 (where both metrics fall to negative values).
- When the company bridges its estimated funding gap by reducing an amount of its cash and other liquid assets, its total indebtedness increases marginally (by less than one percentage point). If an issuance of new equity shares is selected instead, then the company's indebtedness falls down, despite the incurred after-tax losses and dividend payouts. In contrast, increasing an amount of the company's financial liabilities (borrowings) entails a noticeable (but not that dramatic) rise in its indebtedness ratio, under recessionary scenarios.
- Despite a moderate impact of all three considered scenarios on the Volkswagen Group's indebtedness ratios, its credit risk would probably rise, due to a material erosion of its EBITDA-to-liabilities ratio, that under all assumed circumstances falls to single-digit levels.

Table 4.16 Actual (for fiscal year 2008) and prospective (for fiscal year 2009) values of selected financial statement ratios of Volkswagen Group

In EUR million	Actual for 2008	Simulated for 2009 under			Source of data
		Scenario 1	Scenario 2	Scenario 3	
OPTION 1: The funding gap in balance sheet is bridged via cash and other current assets					
(1) Operating profitability	5.6% = 6,333/13,808	2.1% = 2,308/108,118	0.0% = -48/96,737	-3.4% = -2,722/79,666	Tables 4.6, 4.7, and 4.9
(2) Return on equity (ROE)	12.5% = 4,688/37,388	0.9% = 350/26,941	-3.7% = - 1,321/35,270	-9.6% = -3,217/33,374	
(3) Total indebtedness	77.7% = 130,531/1167,919	77.5% = 127,061/164,002	78.3% = 126,922/162,192	78.5% = 121,720/155,094	
(4) EBITDA to total liabilities	11.3% = (6,333 + 8,406)/130,531	9.7% = (2,308 + 9,995)/127,061	7.8% = (-48 + 9,995)/126,922	6.0% = (-2,722 + 9,995)/121,720	
OPTION 2: The funding gap in balance sheet is bridged via issuance of new equity					
(1) Operating profitability	5.6% = 6,333/13,808	2.1% = 2,308/108,118	0.0% = -48/96,737	-3.4% = -2,722/79,666	Tables 4.6, 4.7, and 4.10
(2) Return on equity (ROE)	12.5% = 4,688/37,388	0.9% = 350/39,281	-3.0% = - 1,321/43,345	-7.2% = -3,217/44,668	
(3) Total indebtedness	77.7% = 130,531/1167,919	76.4% = 127,061/166,342	74.5% = 126,922/170,267	73.2% = 121,720/166,388	
(4) EBITDA to total liabilities	11.3% = (6,333 + 8,406)/130,531	9.7% = (2,308 + 9,995)/127,061	7.8% = (-48 + 9,995)/126,922	6.0% = (-2,722 + 9,995)/121,720	
OPTION 3: The funding gap in balance sheet is bridged via new borrowings					
(1) Operating profitability	5.6% = 6,333/13,808	2.1% = 2,308/108,118	0.0% = -48/96,737	-3.4% = -2,722/79,666	Tables 4.6, 4.7, and 4.15
(2) Return on equity (ROE)	12.5% = 4,688/37,388	0.8% = 313/36,904	-4.2% = - 1,466/35,125	-10.3% = -3,422/33,169	
(3) Total indebtedness	77.7% = 130,531/1167,919	77.8% = 129,38/166,342	79.4% = 135,20/170,326	80.1% = 133,304/166,473	
(4) EBITDA to total liabilities	11.3% = (6,333 + 8,406)/130,531	9.5% = (2,308 + 9,995)/129,38	7.4% = (-48 + 9,995)/135,201	5.5% = (-2,722 + 9,995) /133,304	

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

Table 4.17 Volkswagen Group's actual (for fiscal year 2008) and simulated (for fiscal year 2009) EBITDA-to-debt ratio and its relationship with credit ratings of Standard & Poor's

Credit risk class	Credit rating category	Average value of EBITDA-to-debt ^a ratio of companies in a given rating class
Investment grade	AAA	71.7%
	AA	58.5%
	A	31.9%
	BBB	27.8%
Speculative grade	BB	24.3%
	B	19.6%
Ratio values computed for Volkswagen Group under Scenario 3		
Actual 2008 (based on data from Tables 4.6 and 4.9)	33.5% $= (6,333 + 8,406)/(69,380 - 25,343)$	
Simulated for 2009: funding gap bridged via cash (based on data from Tables 4.6, 4.7 and 4.9)	13.1% $= (-2,722 + 9,995)/(69,380 - 14,049)$	
Simulated for 2009: funding gap bridged via new equity (based on data from Tables 4.6, 4.7 and 4.9)	16.5% $= (-2,722 + 9,995)/(69,380 - 25,343)$	
Simulated for 2009: funding gap bridged via new borrowings (based on data from Tables 4.6, 4.7 and 4.15)	13.1% $= (-2,722 + 9,995)/(80,964 - 5,343)$	

^a*(Operating profit + Depreciation and amortization)/(Total financial liabilities—Cash and current liquid assets)*

Source Palepu et al. (2013) and authorial computations

A usefulness of the prospective financial statement analysis is also illustrated well by numbers disclosed in Table 4.17, where EBITDA-to-debt ratio is examined. It is a metric that differs from a similar one interpreted earlier in this section in a composition of its denominator. While the ratio investigated in Table 4.16 took into account total liabilities (i.e. all payables and financial debts), the denominator of the ratio computed in Table 4.17 includes financial liabilities (borrowings) only, net of cash and liquid financial assets.

The upper part of Table 4.17 presents an observed statistical relationship between corporate credit ratings (on a scale applied by Standard & Poor's) on the one side, and average values of EBITDA-to-debt ratios on the other side (Palepu et al., 2013). As may be clearly seen, there exists a strong correlation between both variables, since higher values of the EBITDA-to-debt ratio are associated with better credit ratings. Importantly, as a rule of thumb, in order to enjoy the investment grade of its debts (i.e. a rating within a “BBB” category or above), a firm should keep a coverage of its financial liabilities (net of liquid assets) by its EBITDA of at least 25%.

As may be seen in the lower part of the table, in its fiscal year 2008 Volkswagen Group's EBITDA-to-debt ratio stood at 33.5%, corresponding to a rating

class of “A” (consistently with the company’s actual rating, as disclosed in its annual report for 2008). However, according to our simulation, the considered recessionary circumstances (Scenario 3) could entail a significant erosion of the Volkswagen Group’s EBITDA-to-debt ratio, to levels more typical for “B” ratings (or even lower), i.e. within a speculative grade category. That, in turn, could negatively affect the company’s access to debt capital (i.e. a possibility of obtaining new loans) or at least would increase its borrowing costs (i.e. interest rates on financial debts).

4.8 Simulation and Analysis of Prospective Cash Flow Statement

In a final stage of our financial simulations, the prospective cash flow statements may be constructed and examined, based on previously prepared prospective income statements and balance sheets (combined with other underlying information). Table 4.18 presents condensed prospective cash flow statements of Volkswagen Group for fiscal year 2009, under Scenario 3 (i.e. the most pessimistic one) and under all three considered ways of bridging the company’s estimated funding gap (i.e. via cash, equity and new borrowings).

Last column of Table 4.18 provides source of data for individual line items, with the following abbreviations used:

- **IS** denotes prospective income statement.
- **PPE&I** denotes property, plant, equipment and intangible assets (excluding goodwill).
- **C&OCA** denotes cash and other current financial assets.

It must be noted that some items of a full-blown cash flow statement are not present in Table 4.18, since in our prospective analysis of Volkswagen Group’s financials they have been assumed at zero amounts. For instance, financial income has been assumed at zero amount, so it does not appear here (while if it had some positive values, it would be included in investing cash flows). Likewise, if an investigated company plans some share buybacks (which reduce equity), they would have to be included in a computation of financing cash flows.

It must be also noted that a change in financial services receivables has been treated here as an element of operating cash flows. This is not consistent with the Volkswagen Group’s actual approach, applied in its annual report for fiscal year 2008, in which the change in financial services receivables has been reported within investing cash flows. However, one year later the company changed its financial reporting policy and reclassified the financial services receivables to operating section of its cash flow statement. Consequently, an approach applied in Table 4.18 is consistent with the Volkswagen Group’s reporting policy followed since its fiscal year 2009.

Table 4.18 Prospective (for fiscal year 2009) condensed cash flow statement of Volkswagen Group, under Scenario 3, for three alternative ways of bridging the funding gap in the company's prospective balance sheet

In EUR million	Simulated for 2009 under Scenario 3, with the funding gap bridged via:			Source of numbers
	Cash	Equity	Borrowings	
Prospective condensed cash flow statement				
(1) Operating cash flows:	3,728	3,728	3,728	
Operating profit	-2,722	-2,722	-2,722	<i>IS for fiscal year 2009</i>
Income tax paid	0	0	0	<i>Deferred income taxes entail no cash flows</i>
Depreciation and amortization	9,995	9,995	9,995	<i>Estimate in Table 4.5</i>
Change in inventories	-571 = - (18,387 - 17,816)	-571 = - (18,387 - 17,816)	-571 = - (18,387 - 17,816)	= - (Inventories 2009 - Inventories 2008)
Change in long-term receivables	2,867 = - (28,988 - 31,855)	2,867 = - (28,988 - 31,855)	2,867 = - (28,988 - 31,855)	= - (Receivables 2009 - Receivables 2008)
Change in current receivables	2,970 = - (30,034 - 33,004)	2,970 = - (30,034 - 33,004)	2,970 = - (30,034 - 33,004)	
Change in operating payables	-8,811 = 52,340 - 61,151	-8,811 = 52,340 - 61,151	-8,811 = 52,340 - 61,151	= Payables 2009 - Payables 2008
(2) Investing cash flows:	-12,410	-12,410	-12,410	= - [(PPE&I 2009 - IPPE&I 2008) + Depreciation and amortization 2009]
Capital expenditures (net of disposals)	-12,410 = - [(44,945 - 42,530) + 9,995]	-12,410 = - [(44,945 - 42,530) + 9,995]	-12,410 = - [(44,945 - 42,530) + 9,995]	
(3) Financing cash flows:	-2,612	7,362	8,682	
Proceeds from share issuance	0	11,294	0	<i>Estimate in Table 4.8</i>
Change in borrowings (net of repayments)	0 = 69,380 - 69,380	0 = 69,380 - 69,380	11,584 = 80,964 - 69,380	= Borrowings 2009 - Borrowings 2008
Finance costs	-1,815	-1,815	-2,105	<i>IS for 2009</i>
Dividends paid	-797	-797	-797	<i>Estimate in Table 4.5</i>

(continued)

Table 4.18 (continued)

In EUR million	Simulated for 2009 under Scenario 3, with the funding gap bridged via:			Source of numbers
	Cash	Equity	Borrowings	
Total cash flows	-11,294	0	0	$[=(1)+(2)+(3)]$
Change of cash and other current assets in balance sheet	-11,294 $= 14,049 -$ 25,343	0 $= 25,343 -$ 25,343	0 $= 25,343 -$ 25,343	$= C\&OCA\ 2009 - C\&OCA\ 2008$

Source Annual reports of Volkswagen Group (for various fiscal years) and authorial computations

A quick run through the numbers disclosed in Table 4.18 leads to the following main observations:

- Estimated prospective operating cash flows are identical under all three assumed channels of equalizing the prospective balance sheet (i.e. cash, equity and borrowings), since individual components of the former are driven by operating factors and are independent from any of the three considered ways of bridging the funding gap.
- Likewise, prospective investing cash outflows are the same under all three channels of equalizing the prospective balance sheet, since they reflect forecasted capital expenditures (on operating noncurrent assets).
- According to the presented estimates, the Volkswagen Group's total operating cash flows would remain positive even in the assumed deeply recessionary environment (i.e. Scenario 3), in spite of a negative simulated operating profit. This is attributable mostly to a largely positive contribution from depreciation and amortization, as well as cash inflows from a collection of receivables (both noncurrent and current ones).
- Financing cash flows have a negative amount when a reduction of cash balances is assumed (as a way of bridging the funding gap), due to finance costs and dividends paid. In contrast, financing cash flows contribute positively to total cash flows when the company is assumed to issue new equity shares or to increase a balance of its borrowings.

4.9 Exercise–Prospective Financial Statement Analysis of Lumentum Holdings

4.9.1 Tasks and Questions

Context of the Simulation: As may be seen in a table on page 5 of the Lumentum's annual report for fiscal year 2018, the company is featured by a high share (30%) of its largest customer, i.e. Apple Corp., in its total sales breakdown. Therefore, the company's managers (as well as creditors and shareholders) should be interested

in a likely impact of a possible loss of the main customer (Apple Corp.) on the Lumentum's profitability, cash flows and general financial sustainability.

Accordingly, the following prospective simulation will be aimed at answering the following general question (accompanied by more specific questions asked below): How might the Lumentum's prospective (in fiscal year 2019) income statement, balance sheet and cash flows look like, if the company hypothetically lose (on the turn of fiscal years 2018 and 2019) its largest customer?

1. STEP 1—Prospective INCOME STATEMENT, based on the following set of analytical assumptions:

- a. **Net revenues:** They fall by 30% y/y in FY 2019 (from their amount reported for FY 2018).
- b. **Gross profit:** Estimate its amount with the use of the **gross margin on sales ratio** [= *Gross profit/Net revenues*], in which case assume that it will stay intact in FY 2019 (i.e. assume that in FY 2019 the percentage gross margin on sales will be the same as in FY 2018).
- c. **R&D, selling, general and administrative expenses (combined):** Assume that in FY 2019 the company will be able to keep their total monetary amount (in USD million) on the same level as in FY 2018. These are mostly fixed costs (at least in the short run), so the company will be unable to reduce them below prior level. But on the other side, in the aftermath of the loss of the largest customer the company's revenues will shrink (by 30%), so it also does not have to increase its expenditures on those non-manufacturing costs. Accordingly, assuming their intact monetary amount seems quite reasonable.
- d. **Restructuring and related charges:** Assume zero, since they include unpredictable (extraordinary) one-off items.
- e. **Unrealized gains/losses on derivative instruments:** Assume zero, since they include unpredictable (extraordinary) one-off items.
- f. **Interest and other income (expense), net:** Assume that the monetary amount of this item will be cut by half (i.e. will fall by 50% from the amount reported for FY 2018), due to the company's planned reduction of its financial debts. The company's managers know that the loss of its major customer will erode its operating profit dramatically, so they decided to also reduce the company's financial liabilities (by half), as explained in point (2) (vii) below, which in turn will entail a proportional (i.e. also by half) decrease in the interest costs.
- g. **Income tax:** Estimate its amount with the use of the **income tax rate** [= *Income tax/Income before income taxes*], in which case assume that it will stay at 30% in FY 2019 (i.e. the amount of income tax should constitute 30% of pre-tax earnings forecasted for FY 2019).

2. STEP 2—Preliminary prospective BALANCE SHEET, based on the following set of analytical assumptions:

- a. **Cash and cash equivalents:** Assume preliminarily that their amount will stay intact in FY 2019 (i.e. they will not change between FY 2018 and FY 2019). This is a preliminary assumption which will be changed later on, after

estimating the forecasted FUNDING GAP or EXCESS OF FUNDS, i.e. a discrepancy between total amounts of both sides of balance sheet, which will be closed by adjusting our preliminarily assumed cash and cash equivalents (together with short-term investments).

- b. **Short-term investments:** Similarly as for cash, assume preliminarily that their amount will stay intact in FY 2019. This preliminary assumption will be changed later on, after estimating the forecasted FUNDING GAP or EXCESS OF FUNDS, which will be closed by adjusting our preliminarily assumed short-term investments (together with cash and cash equivalents).
- c. **Non-cash current assets** (i.e. Receivables, Inventories and Prepayments, combined into a single line item, as shown in row 31 of the sheet “*Prospective IS & BS*” of the Excel file “*Lumentum Working File*”): Assume that their monetary amount will fall in FY 2019 by 15% y/y. In the aftermath of the loss of the largest customer, the company’s revenues will shrink (by 30%), so it also will need less inventories and will have lower receivable accounts (as a direct consequence of lower sales). However, the company will not be able to quickly reduce its inventories in tune with suddenly eroded revenues. Accordingly, assuming the decrease of non-cash current assets by 15% (i.e. slower by half than the fall of sales by 30%) seems reasonable.
- d. **Property, plant and equipment & intangible assets (combined):** Assume here that the company will have to increase their amount in FY 2019 by the same percentage, as in FY 2018 (so first compute the growth rate in FY 2018 and then apply it to forecast the amount of those assets in FY 2019). In fact, the company will have large unused production capacity (as a result of lower sales, by 30%), but it will be unwilling to quickly dispose of its temporarily idle assets (since it will look for the new customers, who would bridge the sales gap created by the loss of Apple). Furthermore, the company was taken by surprise with its sudden loss of Apple, when it already had some commitments for ordered new production lines (the orders which are non-cancellable). That is why assuming a continued increase of property, plant and equipment (combined with intangibles), by the same percentage growth as in FY 2018, seems reasonable.
- e. **Deferred income taxes & Other noncurrent assets (combined):** Assume that they will stay intact (i.e. at the same amount as at the end of FY 2018), since they include unpredictable non-operating items.
- f. **Total current liabilities** (which include only operating payables, combined into a single line item): Assume that their monetary amount will fall in FY 2019 by 15% y/y. In the aftermath of the loss of the largest customer, the company’s revenues will shrink (by 30%), so it will also have lower manufacturing costs (as a direct consequence of lower output) and lower volumes of inventories. However, the company will be able to renegotiate and lengthen their deferred payment terms to suppliers (from current 70–75 days, to 90–100 days). Accordingly, assuming the decrease of current

payables by 15% (i.e. slower by half than the fall of sales by 30%) seems reasonable.

- g. **Convertible notes:** Assume that the monetary amount of this item will be cut by half (i.e. will fall by 50% from the amount reported for FY 2018), due to the company's planned reduction of its financial debts. The company's managers know that the loss of its major customer will erode its operating profit dramatically, so they decided to also reduce the company's financial liabilities (by half), to keep the company's business risks balanced (i.e. eroded profitability offset by lower indebtedness).
 - h. **Derivative liability & Other noncurrent liabilities (combined):** Assume that they will stay intact (i.e. at the same amount as at the end of FY 2018), since they include unpredictable non-operating items.
 - i. **Total redeemable convertible preferred stock:** Assume that its amount will stay intact (i.e. at the same amount as at the end of FY 2018), since it also did not change in the prior years.
 - j. **Total stockholders' equity:** Forecast it with the following formula: [= *Equity in FY 2019 = Equity in FY 2018 + Net income (loss) simulated for FY 2019 – Dividend paid out in FY 2019*], and assume that in FY 2019 the company will pay out dividend equal to 50% of its net income earned in FY 2018 (although Lumentum's managers would love to retain the entire earnings from FY 2018 in the company, as a financial cushion for those “rainy days”, they know that shareholders would be upset by a zero dividend—so a dividend payout of 50% earnings from FY 2018 is more reasonable).
3. **STEP 3—Calculation of and adjustment for simulated FUNDING GAP or EXCESS OF FUNDS, based on the preliminary prospective balance sheet (in which both sides have unequal total amounts), created in Step 2:**
- a. **Calculate a FUNDING GAP (if any),** which appears when forecasted total assets (row 37 of the sheet “*Prospective IS & BS*” of the Excel file “*Lumentum Working File*”) exceed forecasted total liabilities, preferred stock and equity (row 52 of the sheet “*Prospective IS & BS*” of the Excel file “*Lumentum Working File*”). If the funding gap is detected, it may be bridged by one (or more) of the following ways:
 - i. Reduction of assets by the amount of the funding gap (e.g. reduction of liquid financial assets, such as cash and short-term investments),
 - ii. Increase in new equity (by the issuance of new shares),
 - iii. Increase in liabilities (e.g. by borrowing new debts and/or extending payment terms to suppliers, resulting in larger operating payables).
 - b. **Calculate an EXCESS OF FUNDS (if any),** which appears when forecasted total liabilities, preferred stock and equity exceed forecasted total assets. If the excess of funds (meaning that the company has more capital than it needs) is detected, it may be bridged by one (or more) of the following ways:
 - i. Increase of assets by the amount of the funding gap (e.g. accumulation of liquid financial assets, such as cash and short-term investments),

- ii. Reduction of equity (e.g. by increasing a dividend payout or by declaring a special dividend or by the stock buy-back),
 - iii. Decrease in liabilities (e.g. by repaying more borrowings than originally planned and/or shortening payment terms to suppliers, resulting in smaller operating payables).
- c. Bridge the Lumentum's prospective balance sheet by adjusting the company's liquid financial assets, as follows:
- i. Divide the obtained FUNDING GAP or EXCESS OF FUNDS by two,
 - ii. If the FUNDING GAP has been detected, then decrease "*Cash and cash equivalents*" by half of the funding gap and "*Short-term investment*" by the remaining half of the funding gap,
 - iii. If the EXCESS OF FUNDS has been detected, then increase "*Cash and cash equivalents*" by half of the funding gap and "*Short-term investment*" by the remaining half of the funding gap.
- d. Check, after bridging the FUNDING GAP or EXCESS OF FUNDS, whether now both sides of the prospective balance sheet have equal total amounts (if not, then some error must have been made in point (iii) above).
4. **STEP 4—Prepare the prospective CASH FLOW STATEMENT, based on the obtained prospective income statement (Step 1) and adjusted prospective balance sheet (Step 3):**
- a. For Your prospective cash flow simulation use the template in the sheet "*Prospective analysis Cash Flows*" of the Excel file "*Lumentum Working File*".
 - b. In case of **Depreciation and amortization** assume that in FY 2019 its monetary amount will increase by the same percentage as the increase in **Property, plant and equipment & Intangible assets**, forecasted before in the row 34 in the sheet "*Prospective IS & BS*" (i.e. assume that the percent growth of depreciation and amortization will be the same as percent growth of depreciable and amortizable noncurrent assets).
 - c. To fill in all the cells in column C (rows 4–23) of our cash flow template, use the inter-relationships (learned before) between all three primary financial statements: income statement, balance sheet and cash flow statement.
5. **STEP 5—After filling in all the cells in column C (rows 4–23) of our cash flow template, answer the following questions:**
- a. Would Lumentum Holding be able to keep its NET INCOME on a positive level, after the assumed loss of its largest customer (combined with other assumptions taken in our simulation)?
 - b. By how much (in percentage terms) the company's NET INCOME would fall in FY 2019, according to Your simulation, as compared to its actual amount reported for FY 2018?
 - c. Would Lumentum Holding be able to keep its OPERATING CASH FLOWS on a positive level, after the assumed loss of its largest customer (combined with other assumptions taken in our simulation)?

- d. By how much (in percentage terms) the company's OPERATING CASH FLOWS would fall in FY 2019, according to Your simulation, as compared to their actual amount reported for FY 2018?
- e. Would the company's INVESTING CASH FLOWS be positive or negative, under our set of analytical assumptions?
- f. Would the company's FINANCING CASH FLOWS be positive or negative, under our set of analytical assumptions?
- g. If, according to Your simulation, the Lumentum's FINANCING CASH FLOWS are negative in FY 2019, then could they be covered by positive combined (summed) OPERATING AND INVESTING CASH FLOWS?
- h. According to Your simulation, which of the eight combinations (scenarios) of cash flows, discussed in Sect. 4.5, would be represented in the Lumentum's case, in its FY 2019 (after the hypothetical loss of the company's largest customer)?
- i. By how much, in both monetary amount and percentage terms, would the Lumentum's cash and cash equivalents change in FY 2019 (under our set of analytical assumptions)?

4.9.2 Answers

1. STEP 1—Prospective income statement is simulated and presented in the Excel file, titled “*Lumentum Analysis*”, in a sheet “*Prospective analysis Step 1*” (rows 2–21).
2. STEP 2—Prospective balance sheet is simulated and presented in the Excel file, titled “*Lumentum Analysis*”, in a sheet “*Prospective analysis Step 1*” (rows 23–52).
3. STEP 3—Calculation of the FUNDING GAP is presented in the Excel file, titled “*Lumentum Analysis*”, in a sheet “*Prospective analysis Step 1*” (row 54). Prospective balance sheet is bridged (for the amount of the estimated funding gap) and presented in the Excel file, titled “*Lumentum Analysis*”, in a sheet “*Prospective analysis Step 2*” (rows 23–52).
4. STEP 4—Prospective cash flow statement is simulated and presented in the Excel file, titled “*Lumentum Analysis*”, in a sheet “*Prospective analysis Step 1*” (rows 23–52).
5. STEP 5—Interpretation of the simulation results (and answers to questions):
 - a. Yes, Lumentum Holding would be able to keep its NET INCOME on a marginally positive level (amounting to 8.8 USD million), after the assumed loss of its largest customer (combined with other assumptions taken in our simulation).
 - b. According to the simulation, the company's NET INCOME would fall in FY 2019 by as much as 96.4% y/y (i.e. down to 8.8 USD million, from 248.1 USD million in FY 2018).

- c. Yes, Lumentum Holding would be able to keep its OPERATING CASH FLOWS on a positive level (amounting to 129.0 USD million), after the assumed loss of its largest customer (combined with other assumptions taken in our simulation).
 - d. According to the simulation, the company's OPERATING CASH FLOWS would fall in FY 2019 by 47.9% y/y (i.e. down to 129.0 USD million, from 247.5 USD million in FY 2018).
 - e. The company's INVESTING CASH FLOWS would be positive (amounting to + 24.3 USD million), under our set of analytical assumptions.
 - f. The company's FINANCING CASH FLOWS would be significantly negative (amounting to -296.0 USD million), under our set of analytical assumptions.
 - g. No, the Lumentum's negative FINANCING CASH FLOWS (-96.0 USD million) could not be covered by positive combined OPERATING AND INVESTING CASH FLOWS, which would sum to 153.3 USD million [= 129.0 USD million + 24.3 USD million].
 - h. According to the simulation, Lumentum's simulated cash flows in FY 2019 (with the assumed loss of its major customer) would correspond to Scenario 2 (i.e. positive operating cash flows combined with positive investing cash flows and negative financing cash flows). That seems consistent with "*a relatively healthy (profitable) businesses, where however some restructuring activities [...] are undertaken*".
 - i. Under this set of analytical assumptions, in its FY 2019 the Lumentum's cash and cash equivalents would fall by 142.7 USD million (i.e. down from 397.3 USD million as at the end of FY 2018, to 254.6 USD million), i.e. by 35.9% y/y.
-

Reference

Palepu, K. G., Healy, P. M., & Peek, E. (2013). *Business Analysis and Valuation (IFRS)*. Cengage Learning.



Real-Life Case Study: A Flight to a Bankruptcy of Norwegian Air Shuttle

5

5.1 Introduction

This comprehensive case study is aimed at demonstrating an importance of a diligent retrospective and prospective financial statement analysis, in case of businesses that report fast rising revenues and seemingly impressive increases in profitability. It is not uncommon that such an allegedly improving financial performance is to a large extent attributable to some favorable but transitory (short-term) external factors, instead of real achievements and economic efficiency of a given company. Under such circumstances, the fast-growing reported profits (and even operating cash flows) are often followed by negative earnings surprises and, as in the case of Norwegian Air Shuttle, a complete financial default.

Norwegian Air Shuttle (abbreviated to “Norwegian” further in this chapter) is considered to be one of the largest European low-cost airlines. However, it has attempted to differentiate its business model from other low-cost carriers by offering long-haul flights (apart from short-haul ones), such as on transatlantic routes that connect Oslo with New York or Paris with New York. Consequently, it was deemed a “disruptor” of an aviation industry, i.e. a firm that dared to challenge “traditional” occupiers of the long-haul flights segment, such as British Airways, Delta Airlines, Lufthansa or KLM-AirFrance. However, the Norwegian’s brave and ambitious growth strategy ended up in its financial troubles and an ultimate bankruptcy filing (in 2020).

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/978-3-030-97582-1_5.

The original version of this chapter was revised: The incorrect text in Table 5.33 has been updated. The correction to this chapter is available at https://doi.org/10.1007/978-3-030-97582-1_6

A detailed analysis and simulation, presented in the following sections of this chapter, will be based on condensed primary financial statements (supplemented by extracts from selected notes to financial statements) of Norwegian Air Shuttle. Those condensed financial statements, in turn, are based on the company's full income statement, balance sheet and cash flow statement, extracted from its published annual reports and disclosed in the Appendix to this chapter. Also, for convenience, an entire following analysis will use the Norwegian's accounting numbers, converted from their amounts reported by the company in NOK thousand (where NOK is an abbreviation used for Norwegian Krone, i.e. Norway's currency), into NOK million.

An investigation of the Norwegian's historical results (in fiscal years 2014 through 2016) will be done first. It will be followed by a prospective simulation (for fiscal year 2017), based on a hypothetical assumption about a possible increase (by 30%) of the global oil price in 2017. The chapter will close with a concise discussion of the further developments and the Norwegian's ultimate insolvency.

5.2 The Norwegian's Growth and Economic Performance in Fiscal Years 2014 Through 2016

Table 5.1 presents selected financial and operational data of Norwegian Air Shuttle in fiscal years 2014 through 2016. Their crude investigation leads to the following conclusions:

Table 5.1 Selected operating and financial data of Norwegian Air Shuttle for fiscal years 2014–2016

Selected financial and operating data	Data for fiscal years:			
	2014	2015	2016	
Selected income statement data	Operating revenue (NOK million)	19,540	22,491	26,054
	EBITDA (NOK million)	−662	1,481	3,116
	EBIT/Operating result (NOK million)	−1,411	348	1,820
	Net profit/loss (NOK million)	−1,070	246	1,135
Selected operating data	Load factor	80.9%	86.2%	87.7%
	Passengers (million)	240	257	293
	Number of routes (operated during the year)	402	447	472
	Number of destinations (at year end)	130	138	130
	Number of aircraft (at year end)	95	99	118

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

- In the analyzed years the company appeared as a “growth stock”, with its cumulative increase in revenues (between 2014 and 2016) of 33%.
- Growing operating revenues seemed to drive quite impressive improvements in profitability (on EBITDA, EBIT as well as net earnings levels), since the company turned from a loss-maker (in 2014) to a business with sizeable earnings (in 2016).
- Accordingly, it could have seemed that an observed growth of the company’s scale of operations enabled it to harvest positive effects of a so-called operating leverage (which tends to be very strong in capital-intensive industries, due to a high share of fixed expenses in a total operating cost breakdown).
- In the analyzed years the Norwegian’s growing revenues were accompanied by an increasing number of passengers and number of aircraft, with simultaneous improvements in a capacity utilization (as proxied by a load factor).

All in all, between 2014 and 2016 Norwegian Air Shuttle seemed to be a fast-growing airline, with its revenues and profits rising in tune with its operational parameters, such as capacity and number of passengers. However, as will be demonstrated in the following sections of this chapter, the company’s seemingly improving profitability in those periods was to a large extent attributable to an entirely external economic factor (which stood out of the company’s control), namely the dramatic fall of the global oil prices.

Our journey through a step-be-step simulation (i.e. a “what if” analysis) of Norwegian Air Shuttle’s performance in fiscal year 2017, based on a hypothetical assumption about a possible reversion of the prior positive trend in a global oil price, will begin with an analysis of the company’s financial results (including selected accounting ratios) reported for fiscal years 2015 and 2016.

5.3 Evaluation of Norwegian’s Financial Performance in Fiscal Years 2015–2016

5.3.1 Condensed Income Statement and Balance Sheet

Further analysis in this chapter will be based on the Norwegian’s condensed financial statements, created by converting the company’s published statements (as reported in its annual reports) to their more shortened and analytically convenient versions. Accordingly, Table 5.2 displays the Norwegian’s condensed income statement, constructed with the use of the company’s accounting numbers, extracted from its reported income statement as well as from selected notes to financial statements.

The following approach has been adopted when building the company’s condensed income statement, as displayed in Table 5.2:

Table 5.2 Condensed income statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data shown in Appendix to the chapter)

Amounts in NOK million	Source of data (IS = Income statement)	2015	2016
(1) Total operating revenue and income	<i>IS</i>	22,491	26,054
(2) Total OPEX, including:	$= (2a) + (2b) + (2c) + (2d)$	22,143	24,234
(2a) Aviation fuel	<i>Note 05</i>	5,184	5,053
(2b) Non-fuel operational expenses ^a	<i>IS & Note 05</i>	15,352	18,462
(2c) Depreciation and amortization	<i>IS</i>	1,133	1,296
(2d) Other losses (+) / gains (−), net	<i>IS</i>	474	−577
(3) EBIT [= (1) − (2)]	<i>IS</i>	348	1,820
(4) Interest income	<i>IS</i>	74	44
(5) Interest expense	<i>IS</i>	−463	−686
(6) Other financial income (+) / expenses (−)	<i>IS</i>	13	117
(7) Share of profit from associated companies	<i>IS</i>	103	213
(8) Profit before tax [= (3) + (4) + (5) + (6) + (7)]	<i>IS</i>	75	1,508
(9) Income tax expense (−) / income (+)	<i>IS</i>	171	−373
(10) Profit for the year [= (8) + (9)]	<i>IS</i>	246	1,135

^a = Operational expenses (as reported in the income statement) + Other operating expenses (as reported in the income statement) − Aviation fuel (as reported in Note 05)

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016 and authorial computations

- For our analytical purposes, a format of the income statement has been modified (as compared to the format used by the company in its annual reports), so that aviation fuel cost constitutes a separate line item, while other operating costs (except for aviation fuel as well as depreciation and amortization) are captured by a single line item, labeled as “*Non-fuel operational expenses*”.
- To avoid confusion, a following presentational convention (not entirely consistent with the Norwegian’s reporting policy) has been adopted in relation to all line items of the condensed income statement, different than revenues (1), aviation fuel (2a), non-fuel operational expenses (2b), depreciation and amortization (2c) and other losses / gains, net (2d):
 - All items that contribute negatively to net earnings, such as interest expense, are presented with negative numbers.
 - All items that contribute positively to net earnings, such as interest income, are presented with positive numbers.
 - This approach is applied also for income tax, which is displayed with a negative number in case of an income tax expense, but with a positive value in case of an income tax income (e.g. when the company recognized tax-loss carryforwards).

Table 5.3 Condensed balance sheet of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data shown in Appendix to the chapter)

Amounts in NOK million	2015	2016
(11) Noncurrent assets, including:	26,525	31,970
(11a) Property, plant and equipment (PPE), including prepayment to aircraft manufacturers	24,813	30,099
(11b) Other noncurrent assets (incl. intangible assets)	1,712	1,871
(12) Current assets, including:	5,109	5,793
(12a) Inventory & Trade and other receivables	2,655	3,117
(12b) Derivative financial instruments	0	353
(12c) Cash and cash equivalents	2,454	2,324
(13) TOTAL ASSETS [= (11) + (12)]	31,634	37,763
(14) Equity	2,965	4,049
(15) Noncurrent liabilities, including:	17,936	20,303
(15a) Borrowings	16,543	18,706
(15b) Operating payables	1,393	1,597
(16) Current (short-term) liabilities, including:	10,733	13,411
(16a) Short term part of borrowings	3,041	4,769
(16b) Operating payables	7,692	8,642
(17) TOTAL EQUITY AND LIABILITIES [= (14) + (15) + (16)]	31,634	37,763

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016 and authorial computations

A rough scrutiny of the condensed income statement, displayed in Table 5.2, leads to the following observations:

- The company's operating cost breakdown was featured by a material share of the aviation fuel expense in total OPEX (which made the company's results sensitive to volatility of global oil prices).
- In both investigated years Norwegian incurred significant interest expenses (that consumed more than one-third of its EBIT in 2016), suggesting the company's significant financial debts.
- In both examined periods the company's profit before tax was boosted by non-negligible positive contributions from financial activities (i.e., interest income, other financial income and profits from associates).

Table 5.3 presents the Norwegian's condensed balance sheet, constructed with the use of the following approach:

- For our analytical purposes, a format of the balance sheet has been modified (as compared to a much more detailed format disclosed by the company in its annual reports), by grouping several individual line items into only two, but more inclusive items. For instance, four line items related to operating tangible

fixed assets (i.e. “*Aircraft, parts and installations on leased aircraft*”, “*Equipment and fixtures*”, “*Buildings*” and “*Prepayments to aircraft manufacturers*”) have been merged into a single item titled “*Property, plant and equipment [...]*”. Likewise, all other individual items of noncurrent assets fell into a single item labeled as “*Other noncurrent assets (incl. intangible assets)*”.

- Since the company’s inventories have immaterial (although non-zero) carrying amounts, it seems legitimate to merge them, for our analytical purposes, with much more valuable receivable accounts, into a single line item titled “*Inventory & Trade and other receivables*”.
- For analytical purposes, the Norwegian’s total noncurrent liabilities have been split into just two items, i.e. “*Borrowings*” and “*Operating payables*” (which capture all items of the company’s reported noncurrent liabilities, other than borrowings). Likewise, the company’s total current liabilities have been divided into only two classes (“*Short term part of borrowings*” and “*Operating payables*”).

A rough scrutiny of the Norwegian’s condensed balance sheet, displayed in Table 5.3, leads to the following observations:

- The company’s noncurrent (fixed) assets consist mostly of operating tangible assets (PPE, combined with prepayments for ordered PPE). Other noncurrent assets (including intangibles) are not very significant, even after grouping them into a single line item.
- The company’s current assets include mostly items with a financial substance, such as receivables, non-operating financial assets and cash holdings.
- The company is featured by a much higher share of noncurrent assets (as compared to current ones) in its total assets, which is entirely consistent with a capital-intensive nature of the Norwegian’s core business operations.
- Carrying amounts of noncurrent borrowings significantly exceed (by several times) the current ones, which is consistent with the company’s much higher share of noncurrent assets (as compared to current ones) in its total assets.

5.3.2 Analysis of Selected Financial Statement Ratios

Table 5.4 presents values of selected financial statement ratios of Norwegian Air Shuttle, based on the following calculational approaches:

- Ratios of ROA (Return on assets) and ROE (Return on equity) have been based on year-end carrying amounts of assets and equity, respectively.
- Only current liquidity ratio has been computed (i.e. quick liquidity ratio has been omitted), due to insignificant carrying amounts of inventories, that for our further analysis have been combined with receivables.

Table 5.4 Selected financial statement ratios of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data displayed in Tables 5.2 and 5.3)

Financial statement ratios		Formula applied (line numbers from Tables 5.2 and 5.3)	2015	2016
Profitability ratios	Operating profitability	= (3) / (1)	1.5%	7.0%
	EBITDA margin	= [(3) + (2c)] / (1)	6.6%	12.0%
	Net profitability	= (10) / (1)	1.1%	4.4%
	ROA	= (10) / (13)	0.8%	3.0%
	ROE	= (10) / (14)	8.3%	28.0%
Financial risk ratios	Total indebtedness	= [(15) + (16)] / (13)	90.6%	89.3%
	Current ratio	= (12) / (16)	0.48	0.43
	EBITDA-to-liabilities	= [(3) + (2c)] / [(15) + (16)]	5.2%	9.2%
	EBITDA-to-net-debt (borrowings)	= [(3) + (2c)] / [(15a) + (16a) - (12c)]	8.6%	14.7%
Turnover ratios	Total assets turnover (cycles)	= (1) / (13)	0.71	0.69
	Inventory & Receivables turnover (days)	= [(12a) / (1)] × 365	43.1	43.7
	Operating payables turnover (days)	= {[(15b) + (16b)] / [(2a) + (2b)]} × 365	161.5	158.9

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016 and authorial computations

- EBITDA-to-net-debt ratio has been taken into consideration, as one of standard metrics used by rating agencies in setting debt ratings (as well as by many lenders in structuring corporate debt covenants).
- Inventory & Receivables turnover ratio has been based on revenues, due to insignificant carrying amounts of inventories, combined with a lack of cost of goods sold in the Norwegian's reported income statement.
- Ratio of operating payables turnover has been based on combined noncurrent and current operating payables (in numerator) and payables-generating items of operating expenses, i.e. aviation fuel and non-fuel operational expenses (in denominator).

An inspection of selected accounting ratios, presented in Table 5.4, leads to the following conclusions:

- Norwegian enjoyed a positive profitability in both analyzed periods, with a significant improvement between fiscal years 2015 and 2016.
- The company delivered ROE (Return on equity) that seemed to exceed its cost of equity capital, particularly in fiscal year 2016.

- However, the company seemed to be exposed to an inflated financial risk, due to its high indebtedness, combined with low liquidity and rather poor (although improving) coverage of total liabilities and net debts (borrowings) by EBITDA.
- According to the upper part of Table 4.17 (in Chapter 4), Norwegian's financial debts deserved a credit rating in a speculative class (B or perhaps even C), despite a noticeable improvement in its financial standing between fiscal years 2015 and 2016.
- The company's turnover ratios did not change materially between both scrutinized years, with a rather short turnover of inventories and receivables (consistently with the company's B2C business model) and a much longer time of its payables settlement (consistent with large prepayments from ticket sales). As a result, Norwegian could enjoy a positive cash conversion cycle that constituted the company's significant source of funding.

5.3.3 Analysis of Reported Cash Flows

Similarly as in the case of income statement and balance sheet, for our analytical purposes the Norwegian's reported cash flow statement has been converted into its somewhat more condensed version, as depicted in Table 5.5.

Table 5.5 Condensed cash flow statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (based on data shown in Appendix to the chapter)

Amounts in NOK million	2015	2016
Profit before tax	75	1,508
Taxes paid	-44	-29
Depreciation and amortization	1,133	1,296
Profit from associated companies	-103	-213
Net effects of financial activities and revaluations of financial assets	25	-574
Changes in working capital	1,258	1,170
Other items (net)	12	-112
Operating cash flows (OCF)	2,356	3,046
Investments in tangible fixed assets (including prepayments), net of disposals	-5,144	-6,416
Other items (net)	-45	-96
Investing cash flows (ICF)	-5,189	-6,512
Proceeds from borrowings (net of repayments)	3,726	4,233
Interest paid	-582	-942
Other items (net)	138	12
Financing cash flows (FCF)	3,282	3,303

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016 and authorial computations

An investigation of the Norwegian's cash flows leads to the following findings:

- In both analyzed periods Norwegian enjoyed positive and growing operating cash flows (OCF), that did not lagged behind its accounting earnings (EBITDA).
- However, the company's operating cash flows were boosted by large positive contributions from changes in working capital (which, in turn, were driven mostly by rising amounts of operating payables, as may be concluded from the condensed balance sheet shown in Table 5.3).
- In both periods Norwegian spent large amounts of money (significantly above the company's operating cash flows) on its tangible noncurrent assets, in contrast to immaterial monetary amounts of other components of its investing cash flows.
- As a consequence of large excesses of investing cash outflows over positive operating cash inflows, the company repeatedly increased the amounts of its financial borrowings (which in both investigated periods constituted a main contributor to its positive financing cash flows).
- As may be also seen in the company's full reported cash flow statement (in the Appendix), in both analyzed years Norwegian Air Shuttle did not obtain any significant proceeds from an issuance of new shares (but it also did not pay out any dividends).

5.3.4 Assessment of the Company's Credit Risk Based on Selected Multivariate Models

In order to validate our earlier findings regarding the Norwegian's high financial risks, selected multivariate credit risk models (discussed with details in Sect. 3.7 of Chapter 3) will now be applied, as auxiliary analytical tools. However, three out of four models explained in Chapter 3 will be used, namely both Altman models (Altman-1 as well as Altman-2) and Taffler model. PHP model, in turn, will be omitted in our analysis presented below, due to its applicability to companies with EUR as a functional currency.

Table 5.6 contains all inputs needed to calculate the values of all variables that appear in all three credit risk assessment models. Tables 5.7, 5.8 and 5.9, in turn, disclose individual variables, parameters and ratio calculations for Norwegian Air Shuttle, for Altman-1, Altman-2 and Taffler credit risk models, respectively.

As was explained in Sect. 3.7 of Chapter 3, the value of the Z-score (Altman-1) below 1.81 calls for classifying a given firm as bearing a high risk of a financial failure in the near future. As may be seen at the bottom of Table 5.7, at the end of both investigated years the values of this synthetic metric of credit risk, computed for Norwegian Air Shuttle, fell below this critical threshold. This means that according to the original Altman's model, the company was "almost bankrupt" in those years.

Table 5.6 Inputs needed to calculate the Norwegian's values of variables that appear in all analyzed credit risk assessment models, for fiscal years 2015 and 2016

Amounts in NOK million (except for non-accounting data)	2015	2016
(1) Sales revenues	22,491	26,054
(2) Depreciation and amortization	1,133	1,296
(3) Operating expenses	22,143	24,234
(4) Operating profit	348	1,820
(5) Profit before tax	75	1,508
(6) Current assets	5,109	5,793
(7) Inventory	104	102
(8) Total assets	31,634	37,763
(9) Current liabilities	10,733	13,411
(10) Total liabilities	28,669	33,714
(11) Working capital (= Current assets – Current liabilities)	-5,624	-7,618
(12) Book value of shareholders' equity	2,965	4,049
(13) Retained earnings	760	1,919
(14) Book value of total debt	19,584	23,475
(15) Book value of net debt (= Total liabilities – Current liquid assets)	26,215	31,390
(16) Number of shares outstanding (million)	358	358
(17) Stock price at 31 December (NOK)	32,370	28,700
(18) Market value of equity [= (16) × (17)]	11,588	10,275

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016 and authorial computations

As stated in Sect. 3.7 of Chapter 3, in the Altman's revised model (Altman-2) the values of Z-score below 1.1 suggest a high bankruptcy risk. As may be concluded from the bottom of Table 5.8, at the end of both investigated years the negative values of this synthetic metric of credit risk, obtained for Norwegian Air Shuttle, stood deeply below this critical safety threshold. This means that according to the revised Altman's model (Altman-2), the company was "almost bankrupt" in those two fiscal years.

Finally, according to what was explained in Sect. 3.7 of Chapter 3, the Taffler's model predicts a high risk of bankruptcy if its Z-score lies below zero. As may be clearly seen in Table 5.9, at the end of both investigated fiscal years the Z-score (Taffler) of Norwegian Air Shuttle was negative, which suggested a high possibility of the company's insolvency in the foreseeable future.

To sum up, despite a seeming improvement of the Norwegian's profitability, observed between fiscal years 2015 and 2016, all three multivariate credit risk models applied here generated material warning signals, regarding the company's insolvency risk, as at the end of both scrutinized periods. This corroborates a legitimacy of a more diligent and thorough investigation of a financial sustainability of Norwegian Air Shuttle, on the background of possible adverse changes in its economic environment (such as a hypothetical increase in global oil price).

Table 5.7 Computation of Z-score (Altman-1) for Norwegian Air Shuttle, as at the end of fiscal years 2015 and 2016

Symbol of variable	Formula for explanatory variable	Model parameters	Values of variables for Norwegian Air Shuttle	
			2015	2016
X1	Working capital / Total assets	1.2	-17.8% (= -5,624 / 31,634)	-20.2% (= -7,618 / 37,763)
X2	Retained earnings / Total assets	1.4	2.4% (= 760 / 31,634)	5.1% (= 1,919 / 37,763)
X3	Operating profit / Total assets	3.3	1.1% (= 348 / 31,634)	4.8% (= 1,820 / 37,763)
X4	Market value of equity / Book value of debt	0.6	0.59 (= 11,588 / 19,584)	0.44 (= 10,275 / 23,475)
X5	Sales revenues / Total assets	1.0	0.71 (= 22,491 / 31,634)	0.69 (= 26,054 / 37,763)
Z-score (Altman-1)			0.92^a	0.94^b

^a = (1.2 × -17.8%) + (1.4 × 2.4%) + (3.3 × 1.1%) + (0.6 × 0.59) + (1.0 × 0.71)

^b = (1.2 × -20.2%) + (1.4 × 5.1%) + (3.3 × 4.8%) + (0.6 × 0.44) + (1.0 × 0.69)

Source Authorial computations based on data presented in Table 5.6

Table 5.8 Computation of Z-score (Altman-2) for Norwegian Air Shuttle, as at the end of fiscal years 2015 and 2016

Symbol of variable	Formula for explanatory variable	Model parameters	Values of variables for Norwegian Air Shuttle	
			2015	2016
X1	Working capital / Total assets	6.56	-17.8% (= -5,624 / 31,634)	-20.2% (= -7,618 / 37,763)
X2	Retained earnings / Total assets	3.26	2.4% (= 760 / 31,634)	5.1% (= 1,919 / 37,763)
X3	Operating profit / Total assets	6.72	1.1% (= 348 / 31,634)	4.8% (= 1,820 / 37,763)
X4	Book value of equity / Book value of net debt	1.05	0.11 (= 2,965 / 26,215)	0.13 (= 31,390 / 117,287)
Z-score (Altman-2)			-0.90^a	-0.70^b

^a = (6.56 × -17.8%) + (3.26 × 2.4%) + (6.72 × 1.1%) + (1.05 × 0.11)

^b = (6.56 × -20.2%) + (3.26 × 5.1%) + (6.72 × 4.8%) + (1.05 × 0.13)

Source Authorial computations based on data presented in Table 5.6

Table 5.9 Computation of Z-score (Taffler) for Norwegian Air Shuttle, as at the end of fiscal years 2015 and 2016

Symbol of variable	Formula for explanatory variable	Model parameters	Values of variables for Norwegian Air Shuttle	
			2015	2016
–	Intercept	3.20	–	–
X1	Profit before tax / Current liabilities	12.18	0.7% = 75 / 10,733	11.2% = 1,508 / 13,411
X2	Current assets / Total liabilities	2.50	0.18 = 5,109 / 28,669	0.17 = 5,793 / 33,714
X3	Current liabilities / Total assets	–10.68	0.34 = 10,733 / 31,634	0.36 = 13,411 / 37,763
X4	[(Current assets – Inventory – Prepaid expenses – Current liabilities) / (Operating expenses – Depreciation and amortization)] × 365	0.03	–99.51 = [(5,109 – 104 – 0 – 10,733) / (22,143 – 1,133)] × 365	–122.84 = [(5,793 – 102 – 0 – 13,411) / (24,234 – 1,296)] × 365
Z-score (Taffler)			–2.88^a	–2.54^b

^a = 3.20 + (12.18 × 0.7%) + (2.50 × 0.18) – (10.68 × 0.33) + (0.03 × –99.51)

^b = 3.20 + (12.18 × 11.2%) + (2.50 × 0.17) – (10.68 × 0.36) + (0.03 × –122.84)

Source Authorial computations based on data presented in Table 5.6

5.3.5 Summary of Findings of the Norwegian's Retrospective Financial Statement Analysis

The findings of our retrospective analysis of Norwegian's financials may be summarized as follows:

- In the investigated three years the company appeared as a “growth stock”, with its cumulative increase in revenues (between 2014 and 2016) of 33%.
- Growing operating revenues were accompanied by evident improvements in profitability (on EBITDA, EBIT as well as net earnings levels), since the company turned from a loss-maker (in 2014) to a business with sizeable earnings (in 2016).
- Consequently, Norwegian was capable of delivering ROE that seemed to exceed its cost of equity capital, particularly in fiscal year 2016.
- The Norwegian's increasing accounting earnings were accompanied by positive and growing operating cash flows (OCF). However, the company's OCF was boosted by large positive contributions from changes in working capital (which, in turn, were driven up mostly by rising amounts of operating payables).
- In both periods Norwegian spent large amounts of money (that significantly exceeded the company's operating cash flows) on its tangible noncurrent assets.

- As a consequence of large excesses of investing cash outflows over positive operating cash inflows, the company repeatedly increased the amounts of its financial borrowings (which in both 2015 and 2016 constituted a main contributor to its positive financing cash flows).
- As a result, the company appeared as being exposed to an inflated financial risk, due to its high indebtedness, combined with low liquidity and rather poor (although improving) coverage of total liabilities and borrowings by EBITDA.
- The Norwegian's high financial risks were corroborated by all three applied multivariate credit risk models, that suggested a high possibility of the company's insolvency in the foreseeable future.
- The Norwegian's operating cost breakdown is featured by a significant share of aviation fuel expense in total OPEX (that makes the company's results sensitive to a volatility of global oil prices).
- The company is featured by a high share of noncurrent assets (which, in turn, consist mostly of operating tangible assets) in its total assets, that seems entirely consistent with a capital-intensive nature of the Norwegian's core business operations.

5.4 Preliminary Prospective Income Statement Simulated for Fiscal Year 2017

5.4.1 Forecast of Sales Revenues

Since Norwegian Air Shuttle's revenues were rising with a stable and strong long-term (multi-year) trend, observed at least between fiscal years 2009 and 2016, their sensible one-year-ahead forecast may be obtained by some reasonable extrapolation of that prior trend. Accordingly, the company's revenues in fiscal year 2017 have been predicted with the use of the following two simple approaches (averaged later on, in order to obtain a final forecast):

- Forecast 1: A statistical extrapolation of the Norwegian's prior non-linear trend of annual operating revenues.
- Forecast 2: A heuristic extrapolation of the Norwegian's revenue growth rate (year over year), observed in the prior few years.

Forecast 1: Statistical Extrapolation of Prior Trend of Annual Revenues

Chart 5.1 presents a multi-year trend of the Norwegian's operating revenues, between fiscal years 2009 and 2016. As may be clearly seen, that trend was very strong (as indicated by the *R*-squared statistic of 0.99) and evidently non-linear. Such a non-linear trend means that logged values of the actual (original) observations should present a linear (straight-line) trend. Indeed, as may be seen on

Chart 5.1 Revenue trend of Norwegian Air Shuttle in fiscal years 2009 through 2016 (*Source* Annual reports of Norwegian Air Shuttle [for various fiscal years] and authorial computations)

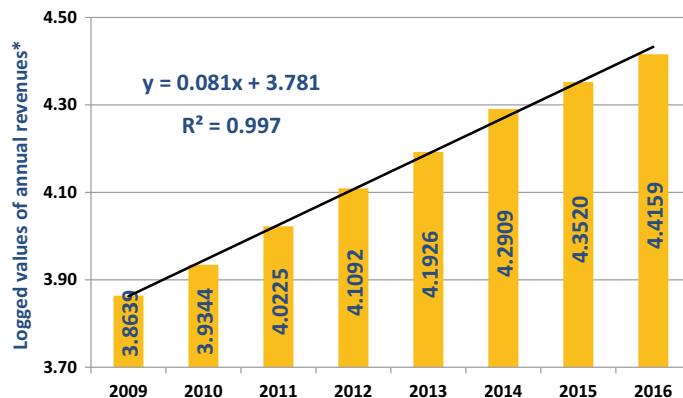
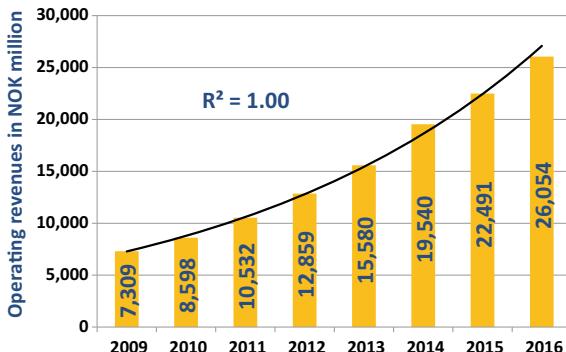


Chart 5.2 Trend of logged values of Norwegian's annual revenues between fiscal years 2009 and 2016 (*Common logarithms of reported operating revenues. *Source* Annual reports of Norwegian Air Shuttle [for various fiscal years] and authorial computations)

Chart 5.2 (which is based on logged data disclosed in Table 5.10), a conversion of the Norwegian's actual revenues (expressed in NOK million) into their logged values effectively transforms their non-linear trend into the straight-line one.

The revenue forecast for fiscal year 2017, based on an extrapolation of the straight-line trend of logged annual revenues (as displayed on Chart 5.2), may be obtained with the following steps:

- Data presented on Chart 5.2 include eight observations (years), so fiscal year 2017 will be a ninth observation within a whole time-series of data.
- Entering the value of nine in place of “x” into the linear regression, displayed on Chart 5.2, will produce a fitted (extrapolated) value of the logged annual revenues in fiscal year 2017.
- This produces a value of 4.5100 [$= (0.081 \times 9) + 3.781$], as a forecast of the logged annual revenues in fiscal year 2017.

Table 5.10 Reported revenues, logged revenues and revenue growth rates of Norwegian Air Shuttle in fiscal years 2009 through 2016

Fiscal year	Sales revenues ^a in NOK million	Logged sales revenues ^b	Revenue growth rate y/y (%)
2009	7,309	3.8639	–
2010	8,598	3.9344	17.6
2011	10,532	4.0225	22.5
2012	12,859	4.1092	22.1
2013	15,580	4.1926	21.2
2014	19,540	4.2909	25.4
2015	22,491	4.3520	15.1
2016	26,054	4.4159	15.8

^aAs reported in the company's consolidated income statements

^bCommon logarithms of reported operating revenues

Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

- In a final step our forecast of an amount of annual revenues (in NOK million) may be obtained by “unlogging” the forecasted logged revenues, i.e. by increasing the value of ten to the power of 4.5100.
- This produces a forecast of the Norwegian's sales revenues in fiscal year 2017, amounting to 32,359 NOK million [= $10^{4.5100}$], after rounding to an integer.

Forecast 2: Heuristic Extrapolation of Prior Revenue Growth Rate

In a second approach to the revenue forecast (i.e. based on the heuristically assumed revenue growth rate), our prediction may be generated as follows:

- As may be seen in the last column of Table 5.10, Norwegian's sales revenues grew by over 20% y/y in fiscal years 2011 through 2014, but in the following two years the growth rate slowed down to 15–16% y/y.
- Since growth rates of corporate revenues and earnings tend to reverse toward the economy-wide means in the long run (Bajaj et al., 2004; Fama & French, 1999; Hwang et al., 1995; Loomis, 2001; Rothovius, 2008; Zweig, 2001), it seems reasonable to assume some further gradual slowdown of the Norwegian's revenue growth rate, in fiscal years 2017 onwards.
- Accordingly, a heuristic assumption may be taken, according to which in its fiscal year 2017 the Norwegian's revenues will increase by 14.5% y/y (i.e. somewhat slower than in previous few years, but still at a double-digit rate).
- Based on this assumption, the forecasted revenues in fiscal year 2017 will amount to 29,832 NOK million [= revenues in fiscal year 2016, amounting to 26,054 NOK million, increased by 14.5%].

Final Revenue Forecast

Our ultimate forecast of the Norwegian's annual operating revenues, in its fiscal year 2017, will constitute an arithmetic mean of both individual predictions and, accordingly, will amount to **31,096 NOK million** [= $(32,359 + 29,832) / 2$], after rounding to an integer.

5.4.2 Forecast of Aviation Fuel Expense

As may be clearly seen in the last column of Table 5.11, in its fiscal years 2014 through 2016 the financial results of Norwegian Air Shuttle evidently benefited from plummeting global oil prices (which fell by as much as 60% between 2012 and 2016). It raises the following two related questions:

- To what extent an evident (and quite impressive) improvement in the company's profitability, observed between 2014 and 2016, reflected its improving business efficiency (vs. an extent to which it was attributable to a "gift" from the company's economic environment, i.e. falling global oil prices and related prices of jet fuel)?
- **What would happen to Norwegian's financial results if the falling trend of global oil price reversed and if in 2017 the oil price increased by (hypothetically) 30%, i.e. to 57.2 USD per barrel [= 44.0 USD on average in 2016 x 1.30], that is still less than its average between 2010 and 2016 (not to mention the average between 2011 and 2013)?**

Table 5.11 Norwegian's cost of aviation fuel and its relation to the company's revenues and global oil prices

Fiscal year	Sales revenues in NOK million (1)	Aviation fuel cost in NOK million (2)	Aviation fuel cost to revenues = [(2) / (1)] (%)	Global oil price (year average) in USD/barrel ^b
2010	8,598	2,093	24.3	79.6
2011	10,532	3,094	29.4	111.0
2012	12,859	3,741	29.1	112.0
2013	15,580	4,707	30.2	108.8
2014	19,540	6,321	32.3	98.9
2015	22,491	5,184	23.0	52.4
2016	26,054	5,053	19.4	44.0
2017	31,096	?	?	57.2

^aAmount in fiscal year 2017 corresponds to the revenue forecast presented in Sect. 5.4.1

^bAmounts for 2010–2016 are year-wide arithmetic means of daily quotations of oil prices (WTI Crude); the amount for fiscal year 2017 assumes an increase in global oil price by 30% y/t [57.2 USD = 44.0 USD x 1.30]

Source Annual reports of Norwegian Air Shuttle (for various fiscal years), Federal Reserve Bank of St. Louis and authorial computations

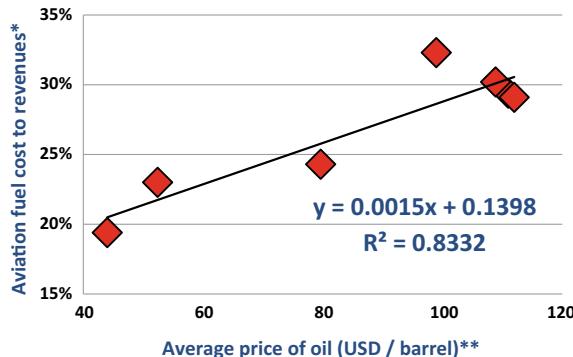


Chart 5.3 Statistical relationship between global price of oil (in USD per barrel) and Norwegian's ratio of aviation fuel cost to sales revenues (*Data from the next-to-last column of Table 5.11, **Data from the last column of Table 5.11. Source Annual reports of Norwegian Air Shuttle [for various fiscal years], Federal Reserve Bank of St. Louis and authorial computations)

A run through numbers presented in Table 5.11, combined with data presented on Chart 5.3, leads to the following findings:

- Relatively low oil price in 2010 meant a low share of aviation fuel cost in Norwegian's operating revenues (below 25%).
- In the next year an increase in the average oil price (to 111.0 USD per barrel) entailed a corresponding increase in the share of aviation fuel cost in Norwegian's revenues (to 29.4%).
- Between 2011 and 2014 the oil price (per barrel) moved within a range between 98.9 USD and 112.0 USD, with a resulting relatively high share of fuel cost in the Norwegian's revenues (about 29–32%).
- In 2015 the average oil price plummeted (from 98.9 to 52.4 USD per barrel), which entailed a reduction of the Norwegian's fuel cost ratio to 23.0% (from 32.3% a year earlier).
- In 2016 the average oil price fell again, down to a record low of 44.0 USD per barrel, with a resulting further reduction of the company's fuel cost ratio, to 19.4% (the lowest value within the entire seven-year timeframe).
- Accordingly, there seems to exist a noticeable (and logical, in light of the company's business profile) positive correlation between global oil prices and Norwegian's share of aviation fuel cost in sales revenues.
- This supposedly strong and positive relationship is confirmed by a scatterplot shown on Chart 5.3 (with the R^2 -squared statistic of 0.83).

Our simulation of an amount of Norwegian's aviation fuel cost, in fiscal year 2017, will combine a hypothetical assumption of an oil price increase by 30% (i.e. to 57.2 USD per barrel, as shown in the last column of Table 5.11) with the linear

regression displayed on Chart 5.3. Consequently, our prediction of the aviation fuel cost will be derived as follows:

- Entering a value of 57.2 USD (i.e. our assumed average price of oil, after its hypothetical increase by 30%), in place of “x” in the linear regression displayed on Chart 5.3, produces a fitted (forecasted) value of the fuel cost ratio in fiscal year 2017.
- This gives a value of 22.6% [= $(0.0015 \times 57.2) + 0.1398$], as a simulated share of the aviation fuel cost in Norwegian’s sales revenues, in fiscal year 2017.
- In a final step a predicted amount of the aviation fuel cost (in NOK million) may be obtained, by multiplying our simulated fuel cost ratio (i.e. 22.6%) by the company’s previously forecasted (in Sect. 5.4.1) sales revenues, amounting to 31,096 NOK million.
- This produces the Norwegian’s predicted aviation fuel cost in fiscal year 2017, amounting to **7,028 NOK million** [= $22.6\% \times 31,096$ NOK million], rounded to an integer.

5.4.3 Forecast of Non-Fuel Operational Expenses

One of the key operational indicators (and drivers of operating costs) in an airline industry is so-called Available Seat Kilometers (abbreviated further to ASK). This metric is dependent mainly on characteristics of a given airline’s fleet (e.g. a number of aircraft, size of individual planes, etc.), combined with parameters of its net of flight destinations (e.g. a number of contracted slots at airports, frequency of flights, etc.). Accordingly, in retrospective as well as prospective analyses of airlines’ performance the ASK is widely used, as a key driver of both revenues and operating expenses.

The ASK-related data, displayed in Table 5.12, are based on selected disclosures extracted from page 05 (section titled “Key Figures”) of the Norwegian Air Shuttle’s annual report for fiscal year 2016. The following abbreviations are used in that table:

- **ASK:** Available Seat Kilometers (in million).
- **RASK:** Revenue per Available Seat Kilometers.
- **CASC:** Costs per Available Seat Kilometers (this includes all operating expenses except for aviation fuel cost and depreciation and amortization).
- **OPEX:** Operating Expenses.

Based on an observation of data presented in Table 5.12, the following heuristic assumptions may be taken for RASK and CASK (for our prospective financial analysis):

Table 5.12 Norwegian's ratio of CASK (non-fuel operating expenses per one available seat kilometer) to RASK (revenues per one available seat kilometer)

Fiscal year	Sales revenues in NOK million (1) ^a	Non-fuel OPEX in NOK million (2) ^b	ASK in million (3) ^c	RASK [= (1) / (3)]	CASK [= (2) / (3)]	CASK / RASK (%)
2013	15,580	9,875	34,318	0.45	0.29	64.4
2014	19,540	13,298	46,479	0.42	0.29	69.0
2015	22,491	15,352	49,028	0.46	0.31	67.4
2016	26,054	18,462	57,910	0.45	0.32	71.1
<i>Assumptions for 2017^d</i>	<i>31,096</i>	<i>?</i>	<i>?</i>	<i>0.44</i>	<i>0.34</i>	<i>77.3</i>

^aAmount in fiscal year 2017 corresponds to the revenue forecast presented in Sect. 5.4.1

^b = Operational expenses (as reported in the income statement) + Other operating expenses (as reported in the income statement) – Aviation fuel (as reported in Note 05)

^cAs reported on page 05 (“Key Figures - Financials”) of the Norwegian’s annual report for fiscal year 2016

^dThe assumed numbers for RASK (0.44) and CASK (0.34) are explained in the text

Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

- RASK will be assumed to continue its gradual decline, observed between fiscal years 2015 and 2016 (when it fell from 0.46 to 0.45), to a value of 0.44 in fiscal year 2017 (based on the argument that the Norwegian’s continued aggressive market expansion, combined with an ongoing extension of its capacity, will require intensified promotional activities in a form of discounted ticket prices, that in turn will imply eroding ticket revenues per one available seat kilometer).
- CASK will be assumed to continue its evidently rising trend, observed between fiscal years 2013 and 2016 (when it grew continuously, from 0.29 to 0.32), to a value of 0.34 in fiscal year 2017.
- Consequently, a ratio of CASK to RASK will be assumed to go on with its prior rising trend (i.e. its noticeable increase between fiscal years 2015 and 2016) and will grow further, from 71.1% in 2016 to 77.3% [= CASK of 0.34 / RASK of 0.44] in fiscal year 2017.

Accordingly, our prediction of the amount of Norwegian’s non-fuel operational expenses, in fiscal year 2017, will be based on an assumption of a continued increase of the company’s CASK-to-RASK ratio, from 71.1 to 77.3%. Consequently, the forecast of the non-fuel OPEX will be obtained as follows:

- Since both RASK and CASK have the same denominator (ASK), our assumed value of CASK-to-RASK ratio (i.e. 77.3%) is the same as the assumed share of non-fuel OPEX in the Norwegian’s revenues, in fiscal year 2017.
- Accordingly, our forecast of the amount of non-fuel OPEX (in NOK million) may be obtained by simply multiplying the assumed CASK-to-RASK ratio (i.e.

77.3%) by the company's previously forecasted (in Sect. 5.4.1) sales revenues, amounting to 31,096 NOK million.

- This produces the Norwegian's predicted non-fuel operational expenses, in fiscal year 2017, amounting to **24,037 NOK million** [= $77.3\% \times 31,096$], rounded to an integer.

5.4.4 Forecast of Depreciation and Amortization Expense

In contrast to most other operating cost items, period-to-period changes in a depreciation and amortization expense (further abbreviated to D&A) are generally not driven by short-term swings in sales revenues, but instead by a given company's base of depreciable and amortizable fixed assets. Consequently, one of the available simple approaches (but not the only one) to forecasting depreciation and amortization is based on a ratio of D&A charged in a given period to carrying amount of depreciable and amortizable assets, as at the end of the preceding period.

However, in such calculations only those assets should be taken into account which are already subject to periodic depreciation and amortization charges. Accordingly, such items as fixed assets under construction or advance payments for ordered fixed assets should be ignored. Therefore, all estimates presented below will be based on the Norwegian's total property, plant and equipment (i.e. item corresponding with line 11a in Table 5.3), stripped out from prepayments to aircraft manufacturers. In other words, our assumed driver of the company's depreciation and amortization charges will constitute a sum of three items reported on its balance sheet: "*Aircraft, parts and installations on leased aircraft*", "*Equipment and fixtures*" and "*Buildings*". Also, since carrying amount of the Norwegian's total intangible assets may be deemed immaterial (and, furthermore, more than half of that amount, as at the end of fiscal year 2016, was attributable to non-amortizable goodwill and other intangibles with indefinite useful lives), for simplicity the amortizable intangibles have been omitted in an analysis presented below (with no risk of material distortions of the obtained analytical findings).

As a result of an omission of property, plant and equipment not yet subject to depreciation charges (i.e. prepayments to aircraft manufacturers), the historical carrying amounts of noncurrent assets presented in Table 5.13 differ from their respective values disclosed in Table 5.3.

Based on an observation of data presented in Table 5.13, our prediction of an amount of the Norwegian's depreciation and amortization expense, in fiscal year 2017, has been constructed as follows:

- As may be seen in the last column of the table, in the last three fiscal years Norwegian Air Shuttle was featured by an evidently declining trend of its ratio of D&A (in a given year) to carrying amount of depreciable PPE (as at the end of the previous year), justifying an assumption of some further decline in fiscal year 2017.

Table 5.13 Norwegian's depreciation and amortization expenses and their relation to lagged carrying amounts Norwegian's depreciable property, plant and equipment (PPE)^a

Amounts in NOK million	Depreciation and amortization expense (D&A) in a given year (1)	Carrying amount of depreciable PPE ^a at the end of the previous year (2) ^b	D&A in a year to depreciable PPE ^a at the end of the previous year = [(1) / (2)] (%)
2013	530	5,648	9.4
2014	748	7,615	9.8
2015	1,133	12,864	8.8
2016	1,296	18,874	6.9
2017 ^c	?	22,943	6.0

^aSums of line items "Aircraft, parts and installations on leased aircraft", "Equipment and fixtures" and "Buildings"

^bData lagged by one year; for instance, the number for 2016 (i.e. 18,874) comes from balance sheet as at the end of 2015, the number for 2017 comes from balance sheet as at the end of 2016, etc.

^cThe ratio assumed for fiscal year 2017 (6.0%) is explained in the text

Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

- After taking this into account, the ratio of depreciation and amortization expense (in 2017) to carrying amount of depreciable assets (as at the end of 2016) has been assumed on a heuristic level, equaling 6.0%.
- Accordingly, our forecast of an amount of depreciation and amortization expense (in NOK million) may be obtained by multiplying the assumed D&A / PPE ratio (i.e. 6.0%) by an actual carrying amount of the depreciable PPE, as at the end of fiscal year 2016 (i.e. 22,943 NOK million).
- This produces the predicted depreciation and amortization expense, in fiscal year 2017, amounting to **1,377 NOK million** [= 6.0% × 22,943], rounded to an integer.

5.4.5 Assumptions and Forecasts of Other Income Statement Items

Other Losses/Gains (Net)

Making an analysis and forecast of this contributor to the Norwegian's earnings requires some deeper digging into notes to the company's financial statements. But before we proceed further, it must be remembered that this particular line item of an income statement constitutes a component of the company's OPEX (operating expenses), so other gains and losses are reported with (–) and (+), respectively. In other words, other gains reduce total OPEX and increase earning, in contrast to other losses that boost expenses and contribute negatively to a reported income.

Let's first take a look at a breakdown of the company's reported other gains and losses (net), as disclosed in Table 5.14. As may be seen, these contributors

Table 5.14 Extract from Note 20 (Financial instruments) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016, disclosing a breakdown of the company's other losses (+) / gains (-), net

Amounts in NOK million	2015	2016
Net losses / gains on financial assets at fair value through profit or loss	1,013	-592
Foreign exchange losses / gains on operating activities	-539	15
Total ^a	474	-577

^aTotal other losses / gains (net), as disclosed on the face of the company's income statement as well as in Table 5.2

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

Table 5.15 Carrying amounts of Norwegian's assets and liabilities related to foreign exchange contracts and forward commodities contracts (as at the end of 2015 and 2016)

Data in NOK million	2015		2016	
	Assets	Liabilities	Assets	Liabilities
Forward foreign exchange contracts	-	1	4	-
Forward commodities contracts	-	781	463	114
Total	-	782	467	114

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

Table 5.16 Extract from Note 20 (Financial instruments) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016, explaining the company's forward commodities contracts

FORWARD COMMODITIES CONTRACTS

Forward commodities contracts related to jet fuel derivatives. [...] As of December 31, 2016, the Group had secured 831 766 tons of jet fuel through forward contracts that mature in period January 2017–June 2018

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

to earnings capture income-affecting changes in fair values of various financial assets, as well as gains and losses stemming from the company's foreign currency activities. However, as may be seen in Table 5.15, at the end of both fiscal years 2015 and 2016 the Norwegian's assets and liabilities, related to those financial instruments, consisted almost exclusively of forward commodities contracts. The narratives quoted in Table 5.16, in turn, shed more light on an origin and economic substance of those derivatives (jet fuel contracts), that reflect the company's hedging policy aimed at mitigating its exposure to the risk stemming from a high volatility (and unpredictability) of market prices of aviation fuel.

In light of the company's functional currency (Norwegian crown, abbreviated to NOK), combined with a scatterplot disclosed on Chart 5.4, it is clear that its exposures to foreign currency risk and jet fuel price risk are not isolated from each other. Evidently, between January 2008 and December 2016, there existed a

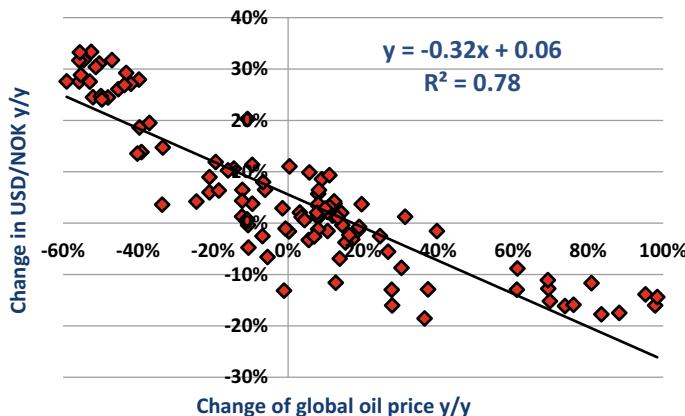


Chart 5.4 Statistical relationship between year-over-year changes in global price of oil, in USD per barrel, and year-over-year changes on USD/NOK currency rate (between January 2008 and December 2016) (Source Federal Reserve Bank of St. Louis and authorial computations)

strong negative correlation (reflected in the R -squared statistic of 0.78) between year-over-year changes in global oil prices on the one side and year-over-year shifts in USD/NOK currency rate on the other side. The more expensive the oil, the stronger the Norwegian currency against US dollar. In contrast, plummeting oil prices tended to entail significant depreciations of the Norwegian's functional currency (at least against US dollar). This seems entirely logical and supported by macroeconomic fundamentals, given Norway's status as a net exporter of oil (with a non-negligible contribution of the oil export to the country's gross domestic product). All in all, in light of those data it makes sense to investigate the company's other gains and losses, driven by currency rate movements as well as changes of jet fuel prices, in a combination (instead of isolation from each other).

Our earlier prospective simulation of an amount of the Norwegian's aviation fuel expense (completed in Sect. 5.4.2) was based on a detected past statistical relationship between that component of OPEX on one side and an average (across the year) global oil price on the other side (as a cost driver). However, an analysis and forecast presented below will be based on annual changes in global oil price at year ends (instead of the averages for the whole year), in order to make our analytical approach consistent with a way in which gains and losses on financial instruments are reported in income statements (were actual realized gains and losses, combined with unrealized changes of fair values between ends of periods, are recognized).

Table 5.17 presents the Norwegian's other losses/gains (net, as disclosed on the face of the company's income statement) on the background of changes in global oil price (between the ends of years) in 2015 and 2016. As may be clearly seen, in fiscal year 2015 the fall of the global oil price by 1,590 USD entailed the Norwegian's other losses (that boosted total amount of its operating expenses) amounting

Table 5.17 Impact of changing global oil price (at year-end) on Norwegian's other losses / gains (net)

Amounts in NOK million	2015	2016	Average
(1) Norwegian's other losses (+) / gains (-), net	474	-577	-
(2) Change in global oil price (in USD per barrel), at year ends ^a	-1,590	2,085	-
= (1) / (2)	-2,981	-2,767	-2,874

^aA difference (in USD) in global price of WTI Crude, between December 31 of a given year and December 31 of the previous year; in fiscal year 2015 the amount of -1,590 reflects a decrease in oil price from 4,760 USD per barrel (on December 31, 2014) to 3,170 USD per barrel (on December 31, 2015); in fiscal year 2016 the amount of 2,085 reflects an increase in oil price from 3,170 USD per barrel (on December 31, 2015) to 5,255 USD per barrel (on December 31, 2016)

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016, Federal Reserve Bank of St. Louis and authorial computations

to 474 NOK million. In contrast, in the following period a reversal was observed (i.e. an increase in a year-end oil price by 2,085 USD per barrel) which resulted in the Norwegian's reported other gains of 577 NOK million. However, in both investigated periods a quotient of the latter to the former fell into a relatively narrow range, between -2,767 NOK million and -2,981 NOK million, with an arithmetic mean equaling -2,874 NOK million. This may be interpreted as follows: In 2015–2016 each US dollar of a change in the global oil price entailed 2,874 NOK million of the Norwegian's gains / losses (net), on average. This averaged number (for previous two years) will be used as a main input to our following simulation (presented below) of a likely impact of our hypothetically assumed scenario, i.e. an increase in the global oil price in 2017 by 30% y/y, on the company's other losses / gains (net) in its next fiscal year.

Based on the analysis presented above, our prospective simulation of an amount of the Norwegian's other losses (+) / gains (-), in fiscal year 2017, will be constructed as follows:

- Global oil price (both a year-wide average and at year-end) will be assumed to rise in 2017 by 30%, i.e. to 6,832 USD per barrel, on December 31, 2017 [= 5,255 USD per barrel at the end of 2016 × 1.30].
- In monetary terms, this implies an increase by 1,577 USD per barrel [= 6,832 USD – 5,255 USD], between the end of 2016 and the end of 2017.
- This, in turn, implies the Norwegian's other gains (net), reducing its total operating expenses in fiscal year 2017, amounting to **-453 NOK million** [= -2,874 NOK million × 1,577 USD per barrel].

Interest Income and Interest Expense

In case of both these line items of the Norwegian's prospective income statement an analytical assumption will be taken, according to which their respective monetary amounts will preliminarily stay intact (and may be changed later on, after

Table 5.18 Extract from Note 08 (Net financial items) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016

Amounts in NOK million	2015	2016
Interest income ^a	74	44
Interest expense ^a	-463	-686
Net foreign exchange loss or gain ^b	26	116
Appreciation cash equivalents ^b	-2	5
Other financial items ^b	-11	-4
Net financial items	-376	-525

^aItems reported separately on the face of the company's income statement

^bItems reported in the company's income statement under a single line item "Other financial income (+) / expenses (-)", totaling 13 NOK million and 117 NOK million in 2015 and 2016, respectively

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

estimating the company's funding gap or excess of funds), in tune with a related preliminary assumption (explained later in this chapter) that the company's cash and cash equivalents (i.e. a driver of the interest income) as well as its total borrowings (i.e. a driver of the interest expense) will keep their carrying amounts as reported at the end of the fiscal year 2017 (and will be adjusted later on, based on the estimated funding gap or excess of funds).

Accordingly, the amounts of the Norwegian's interest income and interest expense, in fiscal year 2017, will be preliminarily assumed at **44 NOK million** and **-686 NOK million**, respectively.

Other Financial Income (Expenses)

This income statement item will be assumed to have a zero amount in fiscal year 2017, based on extracts from Note 08 to the Norwegian's financial statements, disclosed in Table 5.18. As may be seen, the first two contributors to the company's net financial items are interest income and interest expense, that have already been discussed above (and preliminarily assumed to remain intact in 2017). Among the remaining three items only one may be considered material. These are effects of currency rate movements, that mostly include unpredictable and netted gains and losses from non-operating financial activities, often with a one-off nature.

Since foreign exchange gains and losses (that constitute a main contributor to "Other financial income / expenses") cannot be forecasted reliably, similarly to other items discussed here (e.g. appreciation or depreciation of cash equivalents), this item of our prospective income statement will be assumed to have a zero amount in fiscal year 2017.

Share of Profit from Associated Companies

This line item of the Norwegian's income statement captures profits/losses from the company's equity-accounted investments (i.e. equity interests in associated

Table 5.19 Extract from Note 25 (Investments in other entities) to consolidated financial statements of Norwegian Air Shuttle for fiscal years 2015 and 2016

Entity	Country	Industry	Ownership interest (%)	Type of investment	Share of profit recognized in 2016 (NOK million)
Norwegian Finans Holding ASA	Norway	Financial institution	20	Associated company	2,104
OSM Aviation Ltd	Cyprus	Aviation crew management	50	Joint venture	24

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

Table 5.20 Norwegian's shares of profits from associated companies in fiscal years 2010 through 2016

	Amounts in NOK million	Share of profit of associated companies
2010		6
2011		20
2012		33
2013		47
2014		58
2015		103
2016		213

Source Annual reports of Norwegian Air Shuttle (for various fiscal years)

companies), as discussed in Sect. 1.2 of Chapter 1. Based on an information presented in Tables 5.19 and 5.20, our prediction of an amount of Norwegian's share of profit from associated companies, in fiscal year 2017, will be constructed as follows:

- According to Table 5.19 (that contains an extract from Note 25 to the Norwegian's financial statements), financial results of two associated entities are included here, but only one of them (in which Norwegian holds 20% equity interest) may be considered material for the company's reported earnings.
- Since we do not have an access to financial statements of those non-controlled entities (due to a fact that they are non-public companies), no any detailed and reliable forecasts of their financial performance can be built. Consequently, only some simplistic yet reasonable approach (e.g. a simple extrapolation of prior trends) can be applied here.
- However, since it is not a crucial line item on the Norwegian's income statement, no any statistical trend extrapolation tools (similar to those applied to a revenue forecast made before) will be used here. Instead, a simple heuristic prediction will be made.

- As may be clearly seen in Table 5.20, an amount of the Norwegian's share of profits from associates rose steadily (and exponentially) between 2010 and 2016. Accordingly, a continuation of that prior trend may be assumed for fiscal year 2017.
- In order to reduce a risk of “overshooting” the forecast (by over-extrapolating the prior exponential trend), in our prediction we will assume that in 2017 an amount reported here will grow by the same monetary amount as in 2016, that is by 110 NOK million [= 213 NOK million – 103 NOK million]. Accordingly, the income contribution from the Norwegian's shares in associated companies will be forecasted at **323 NOK million** [= 213 NOK million in 2016 + 110 NOK million].

Income tax Expense/Income

Our forecast of this line item of the Norwegian's income statement will assume that its amount is negative (reducing net earnings) in periods of a positive profitability but has a positive value (reducing an after-tax loss) when the company incurs a pre-tax loss. Under such an assumption the “negative” income tax (i.e. income tax income) will reflect mainly tax-loss carryforwards (that create deferred tax assets in a balance sheet), which may reduce the company's future income tax burdens.

Indeed, as demonstrated in Table 5.21, in fiscal years featured by negative or only marginally positive pre-tax profitability (2014 and 2015) Norwegian Air Shuttle reported positive income tax contributions. They were to a large extent attributable to tax-loss carryforwards, as confirmed by Note 09 (Tax), not presented here, to the company's financial statements for fiscal years 2014 and 2015. A positive income tax contribution in fiscal year 2015, reported in spite of marginally positive profit before tax, stemmed from book-tax differences between financial reporting standards (IFRS) and income tax regulations effective in the company's tax jurisdiction.

Table 5.21 Norwegian's pre-tax and after-tax profits / losses in fiscal years 2010 through 2016

Amounts in NOK million	Profit before tax	Income tax expense (–) / income (+)	After-tax (net) profit for the year
2010	243	–72	171
2011	166	–44	122
2012	623	–166	457
2013	437	–116	321
2014	–1,627	557	–1,070
2015	75	171	246
2016	1,508	–373	1,135

Source Annual reports of Norwegian Air Shuttle (for various fiscal years)

In our further analysis, an effective income tax rate of 25% will be assumed, consistent with disclosures extracted from Note 09 (Tax) to the Norwegian's financial statements for fiscal year 2016. However, a monetary amount of the income tax expense (or income tax income) cannot be estimated at this point, since a preliminary amount of profit before tax must be calculated first (based on all assumptions and estimates developed in Sects. 5.4.1 through 5.4.4). The preliminary income statement will be built in the following section, in which also the preliminary amount of the income tax will be calculated.

5.4.6 Preliminary Prospective Income Statement (Before Its Further Adjustments)

Now a compilation of all our prior assumptions and estimates (discussed with details in Sects. 5.4.1 through 5.4.5) enables a preparation of our preliminary prospective income statement (before its optional further adjustments), as presented in Table 5.22. As may be clearly seen, under the entire set of our assumptions and predictions the company would incur an operating loss in fiscal year 2017 (as expected, mostly attributable to increased jet fuel costs, combined with a higher share of non-fuel expenses in revenues) and yet deeper pre-tax loss. However, the simulated after-tax loss (that will constitute an important bridge between our prospective income statement and prospective balance sheet) is not as deep as the loss before tax, due to tax-loss carryforwards amounting to 303 NOK million [= Pre-tax loss of 1,212 NOK million \times 25% income tax rate, as assumed in Sect. 5.4.5].

5.5 Preliminary Prospective Balance Sheet Simulated for Fiscal Year 2017

5.5.1 Forecast of Carrying Amount of Property, Plant and Equipment (Including Prepayments to Aircraft Manufacturers)

Since in its annual reports Norwegian Air Shuttle does not disclose monetary amounts of its planned (future) investment expenditures on operating fixed assets (CAPEX), our forecast of carrying amount of this balance sheet item will be based on the company's extrapolated asset turnover ratios (inversed, i.e. with assets in numerator and revenues in denominator). To this end, Table 5.23 presents a four-year trend of a ratio of the company's property, plant and equipment (including prepayments for new aircrafts) to its annual operating revenues.

As may be clearly seen, in the investigated four years the value of this ratio grew systematically and significantly. After taking into account Norwegian's planned continued investments on its fleet (reflected, among others, in large carrying amounts of aircraft prepayments on its balance sheet), a further rise in the value of

Table 5.22 Historical (for fiscal years 2015 and 2016) and prospective (for fiscal year 2017) condensed income statement of Norwegian Air Shuttle

Amounts in NOK million	Source of data for 2017	2015 ^a	2016 ^a	2017 ^b
(1) Total operating revenue and income	Section 5.4.1	22,491	26,054	31,096
(2) Total OPEX, including:		22,143	24,234	31,989
(2a) Aviation fuel	Section 5.4.2	5,184	5,053	7,028
(2b) Non-fuel operational expenses	Section 5.4.3	15,352	18,462	24,037
(2c) Depreciation and amortization	Section 5.4.4	1,133	1,296	1,377
(2d) Other losses (–) / gains (+), net	Section 5.4.5	474	-577	-453
(3) EBIT [= (1) – (2)]		348	1,820	-893
(4) Interest income	Section 5.4.5	74	44	44
(5) Interest expense	Section 5.4.5	-463	-686	-686
(6) Other financial income (+) / expenses (–)	Section 5.4.5	13	117	0
(7) Share of profit from associated companies	Section 5.4.5	103	213	323
(8) Profit before tax [= (3) + (4) + (5) + (6) + (7)]		75	1,508	-1,212
(9) Income tax expense (–) / income (+)		= -25% × (8)	171	-373
(10) Profit for the year [= (8) + (9)]		246	1,135	-909

^aData extracted from Table 5.22^bProspective data (not the actual financial results) estimated on the basis of assumptions presented in the preceding sections of the chapter

Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

Table 5.23 Ratio of carrying amount of Norwegian's property, plant and equipment (including prepayments to aircraft manufacturers) to its annual operating revenues in fiscal years 2013 through 2017

Amounts in NOK million	Property, plant and equipment (PPE) ^a at the end of a given year (1)	Revenues in a given year (2)	Property, plant and equipment ^a to revenues = [(1) / (2)] (%)
2013	10,130	15,580	65.0
2014	16,967	19,540	86.8
2015	24,813	22,491	110.3
2016	30,099	26,054	115.5
2017 ^b	?	31,096	120.0

^aIncluding prepayments to aircraft manufacturers

^bThe ratio assumed for fiscal year 2017 (120.0%) is explained in the text

Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

the scrutinized ratio seemed likely also in 2017. Accordingly, its increase to 120% (from 115.5% in 2016) will be heuristically assumed in our forecast.

Based on such assumptions, our prediction of carrying amount of Norwegian's property, plant and equipment (including prepayments to aircraft manufacturers) may be constructed by simply multiplying an assumed ratio of this balance sheet item to the company's annual revenues (i.e. 120.0%), by the previously forecasted revenues in fiscal year 2017 (i.e. 31,096 NOK million). This produces a forecast of the carrying amount of Norwegian's property, plant and equipment, as at the end of fiscal year 2017, amounting to **37,315 NOK million** [= 120.0% × 31,096 NOK million], rounded to an integer.

5.5.2 Forecast of Carrying Amount of Other Noncurrent (Long-Term) Assets

This line item of our condensed balance sheet includes several classes of noncurrent assets that have very diverse economic substances. Most of them are difficult or impossible to forecast reliably (particularly items like derivative financial instruments, financial assets available for sale or long-term receivable accounts), so one of the simplest approaches is to assume that their carrying amounts will stay intact in the following fiscal year (with two exceptions explained in the next paragraph). Such a simplifying assumption should not materially distort our analytical findings, regarding the company's financial standing, in light of a rather low share of carrying amount of other noncurrent assets in Norwegian's total assets.

However, keeping a prospective carrying amount of our entire line item "*Other noncurrent assets (incl. intangible assets)*" intact would be conceptually incoherent with the assumptions taken before (when constructing our preliminary income statement), in relation to two income contributors:

- Forecasted “*Share of profit from associated companies*” (amounting to 323 NOK million) that corresponds to a balance sheet item “*Investment in associate*”, disclosed separately on the Norwegian’s reported balance sheet but included within our “*Other noncurrent assets (incl. intangible assets)*”.
- Forecasted tax-loss carryforwards (amounting to 303 NOK million, according to our prior estimate presented in Sect. 5.4.6), that reduce an amount of the Norwegian’s after-tax loss, in correspondence with “*Deferred tax asset*”, disclosed separately on the Norwegian’s reported balance sheet but included within our “*Other noncurrent assets (incl. intangible assets)*”.

Accordingly, our prediction of a year-end carrying amount of total “*Other noncurrent assets (incl. intangible assets)*” will be obtained as a sum of its prior carrying amount, as at the end of the previous year (i.e. 1,871 NOK million), the forecasted “*Share of profit from associated companies*” (i.e. 323 NOK million) and the preliminarily estimated tax-loss carry-forward (i.e. 303 NOK million). As a result, our estimated prospective book value of total “*Other noncurrent assets (incl. intangible assets)*”, as at the end of fiscal year 2017, amounts to **2,497 NOK million** [= 1,871 NOK million + 323 NOK million + 303 NOK million].

5.5.3 Forecast of Carrying Amount of Inventory and Receivable Accounts

Carrying amounts of these asset classes are typically forecasted with the use of some forms of inverted turnover ratios. Accordingly, Table 5.24 displays a four-year trend of a ratio of Norwegian’s inventories and receivables (combined) to the company’s annual operating revenues. Gradual but monotonically rising trend of the ratio seems to legitimize an assumption of its continued increase in the near future. Accordingly, for fiscal year 2017 the value of this metric will be heuristically assumed to rise further, to 12.2%.

Table 5.24 Ratio of carrying amount of Norwegian’s inventory and receivable accounts to its revenues in fiscal years 2013 through 2017

Amounts in NOK million	Inventory & Trade and other receivables (1)	Revenues in a given year (2)	Inventory and Receivables to revenues = [(1) / (2)] (%)
2013	1,697	15,580	10.9
2014	2,256	19,540	11.5
2015	2,655	22,491	11.8
2016	3,117	26,054	12.0
2017 ^a	?	31,096	12.2

^aThe ratio assumed for fiscal year 2017 (12.2%) is explained in the text

Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

Based on these assumptions, our forecast of carrying amount of Norwegian's inventory and receivable accounts, as at the end of fiscal year 2017, will be constructed as follows:

- The forecast will be obtained by multiplying our assumed inversed turnover ratio of the combined inventories and receivables (i.e. 12.2%) by the Norwegian's annual revenues, forecasted for fiscal year 2017 (i.e. 31,096 NOK million).
- This produces a forecast of the carrying amount of Norwegian's inventories and receivable accounts, as at the end of fiscal year 2017, amounting to **3,794 NOK million** [= $12.2\% \times 31,096$ NOK million], rounded to an integer.

5.5.4 Assumptions and Forecasts of Other Asset Items

Derivative Financial Instruments

Forecasted carrying amount of this item of the Norwegian's balance sheet will be obtained by adjusting its prior value (as at the end of fiscal year 2016), i.e. 353 NOK million, for our forecasted other gains (comprising mostly fair value adjustments related to derivative instruments), amounting to 453 NOK million, according to our estimates conducted earlier in Sect. 5.4.5. This will imply and *implicite* assumption that an entire amount of those derivative-driven other gains (i.e. 453 NOK million), predicted for fiscal year 2017, will have a non-monetary nature and will include unrealized gains only. This assumption may be released later on, in the further step of the analysis.

According to such assumptions the forecasted carrying amount of derivative financial instruments, as at the end of fiscal year 2017, amounts to **806 NOK million** [= 353 NOK million + 453 NOK million].

Cash and Cash Equivalents

As was already explained before (in relation to a forecasted interest income, in Sect. 5.4.5), a carrying amount of this monetary item will be preliminarily assumed to stay intact (and may be changed later on, based on the estimated funding gap or excess of funds).

Accordingly, the carrying amount of the Norwegian's cash and cash equivalents, as at the end of fiscal year 2017, will be preliminarily assumed at **2,324 NOK million**.

5.5.5 Forecast of Carrying Amount of Equity

A preliminary carrying amount (with an optional correction possible later on) of the Norwegian's shareholders' equity will be computed with the use of the following formula:

$= \text{Equity at the end of 2016} + \text{Net earnings forecasted for 2017} - \text{Dividends paid in 2017 (if any)} + \text{Proceeds from an issuance of new shares (if any)}$

The following assumptions will be taken here:

- According to Norwegian's reported cash flow statements for fiscal years 2013 through 2016, the company did not pay out any dividends in that four-year period. Accordingly, no dividend payout will be assumed for fiscal year 2017.
- For the moment no any proceeds from an issuance of new shares will be assumed (which may however be changed later on, after a preliminary estimate of the funding gap or excess of funds is obtained).

Based on these assumptions, our preliminary book value of the company's equity, as at the end of fiscal year 2017, will differ from its equivalent number as at the end of the previous year by an amount of an expected after-tax loss, amounting to 909 NOK million (according to our prior estimates, presented in Sect. 5.4.6). Consequently, our preliminarily forecasted carrying amount of the Norwegian's equity amounts to **3,140 NOK million** [= 4,049 NOK million of equity as reported at the end of fiscal year 2016 – 909 NOK million of the after-tax loss, forecasted preliminarily for fiscal year 2017].

5.5.6 Forecast of Carrying Amount of Liabilities

Total (Long-Term and Short-Term) Borrowings

As was already explained before (in relation to a forecasted interest expense, in Sect. 5.4.5), a carrying amount of this balance sheet item will be preliminarily assumed to stay intact (and may be changed later on, based on the estimated funding gap or excess of funds).

Accordingly, the carrying amount of the Norwegian's long-term borrowings, as at the end of its fiscal year 2017, will be preliminarily assumed at **18,706 NOK million**. Likewise, the carrying amount of the company's short-term part of borrowings will be preliminarily assumed at **4,769 NOK million**.

Total (Long-Term and Short-Term) Operating Payables

Similarly to inventories and receivables, carrying amounts of this class of corporate liabilities are typically forecasted with the use of some form of inverted turnover ratios (in which operating expenses are usually used as a driver of operating payables). Accordingly, Table 5.25 presents a four-year trend of a quotient of Norwegian's total (i.e. combined long-term and short-term) payables to the company's non-depreciation OPEX (meant as "Total OPEX" less "Depreciation and amortization"). Evidently rising recent trend of the ratio seems to justify an assumption of its continued increase in the near future. Accordingly, for fiscal year 2017 the value of this metric will be heuristically assumed to increase further, to 46.0%.

Table 5.25 Ratio of carrying amount of Norwegian's total (i.e. combined noncurrent and current) operating payables to the company's non-depreciation operating expenses in fiscal years 2013 through 2017

Amounts in NOK million	Long-term payables(1)	Short-term payables (2)	Total payables (3) = (1) + (2)	Total OPEX ^a (4)	D&A ^b (5)	Non-D&A OPEX (6) = (4) – (5)	Payables to non-D&A OPEX = (3) / (6) (%)
2013	984	4,517	5,501	14,610	530	14,080	39.1
2014	1,208	6,107	7,315	20,951	748	20,203	36.2
2015	1,393	7,692	9,085	22,143	1,133	21,010	43.2
2016	1,597	8,642	10,239	24,234	1,296	22,938	44.6
2017 ^c	?	?	?	31,989	1,377	30,612	46.0

^aTotal operating expenses

^bDepreciation and amortization expense

^cThe ratio assumed for fiscal year 2017 (46.0%) is explained in the text

Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

Based on these assumptions, our forecast of a total carrying amount of Norwegian's long-term and short-term operating payables, as at the end of fiscal year 2017, will be constructed as follows:

- The forecast will be obtained by multiplying our assumed inversed turnover ratio of combined long-term and short-term payables (i.e. 46.0%) by the Norwegian's annual non-depreciation OPEX, forecasted for fiscal year 2017 (i.e. 30,612 NOK million = “*Total OPEX*” amounting to 31,989 NOK million less “*Depreciation and amortization*” of 1,377 NOK million).
- This produces a forecast of the carrying amount of Norwegian's total payable accounts, as at the end of fiscal year 2017, amounting to **14,082 NOK million** [= 46.0% × 30,612 NOK million], rounded to an integer.

A final step here is to allocate our forecasted amount of the Norwegian's total operating payables (i.e. 14,082 NOK million) into their long-term and short-term parts. According to data disclosed in Table 5.25, at the end of fiscal years 2015 and 2016 the share of long-term payables in total payables equaled 15.3% [= 1,393 NOK million / 9,085 NOK million] and 15.6% [= 1,597 NOK million / 10,239 NOK million], respectively. However, in the earlier two periods this ratio hovered within a range between 16.5 and 17.9%. Accordingly, it seems likely that after its fall in fiscal year 2015, in the following period the investigated metric started a gradual reversion toward its prior, higher values. Consequently, it seems reasonable to assume some continuation of an increase of a share of long-term payables in total ones, in fiscal year 2017. Thus, a value of 16.0% will be assumed in our financial simulation, with the resulting forecasted carrying amounts of long-term and short-term payables, amounting to **2,253 NOK million** [= 16.0% × 14,082 NOK million].

NOK million] and **11,829 NOK million** [= 14,082 NOK million – 2,286 NOK million], respectively.

5.5.7 Preliminary Prospective Balance Sheet (Before Its Further Adjustments)

Now a compilation of all our prior assumptions and estimates (discussed with details in Sects. 5.5.1 through 5.5.6) enables a preparation of our preliminary prospective balance sheet (before its optional further adjustments), as presented in Table 5.26. As may be clearly seen, under the entire set of our assumptions and predictions Norwegian Air Shuttle would have total **assets amounting to 46,736 NOK million** and total **equity and liabilities amounting to 40,697 NOK million**. Accordingly, **the company would face a sizeable funding gap (i.e. shortage of funds), amounting to as much as 6,039 NOK million** [= 46,736 NOK million – 40,697 NOK million], that would have to be “plugged” by one or more of the following ways:

- **Issuance of new equity shares** (but the company’s estimated funding gap amounts to as much as over 6.0 NOK billion, i.e. much more than the carrying amount of its equity...).
- **Further rise in indebtedness**, i.e. increasing amount of the company’s borrowings and/or operating payables (but the company has already been heavily indebted and, furthermore, started incurring losses...).
- **Reduction of the company’s asset base**, by eroding its cash balances (which, however, amounted to 2.3 NOK billion only, as at the end of 2016) and/or disposing of some of its non-monetary assets (e.g. by factoring receivable accounts and/or entering some sale-and-lease-back transactions of its airplanes).
- **Some combination of more than one of the above options.**

All these funding options, as well as actual developments in fiscal years 2017 and 2018, will be scrutinized in the following sections.

5.5.8 Preliminary Prospective Operating Cash Flows

Table 5.27 contains the Norwegian’s simulated prospective operating cash flows, based on our obtained prospective income statement and balance sheet. However, only operating cash flows are investigated here, since an estimation of prospective investing and financing cash flows will be possible only after assuming some concrete ways of bridging the company’s funding gap (e.g. via an issuance of new shares and/or disposals of some assets).

As may be clearly seen, under an entire set of our analytical assumptions the Norwegian’s operating cash flows would remain positive (and even growing) in fiscal year 2017, despite incurred accounting losses. However, this would be

Table 5.26 Historical (for fiscal years 2015 and 2016) and prospective (for fiscal year 2017) condensed balance sheet of Norwegian Air Shuttle

Amounts in NOK million	Source of data for 2017	2015 ^a	2016 ^a	2017 ^b
(11) Noncurrent assets, including:		26,525	31,970	39,812
(11a) Property, plant and equipment (PPE), including prepayment to aircraft manufacturers	Section 5.5.1	24,813	30,099	37,315
(11b) Other noncurrent assets (incl. intangibles)	Section 5.5.2	1,712	1,871	2,497
(12) Current assets, including:		5,109	5,793	6,924
(12a) Inventory & Trade and other receivables	Section 5.5.3	2,655	3,117	3,794
(12b) Derivative financial instruments	Section 5.5.3	0	353	806
(12c) Cash and cash equivalents	Section 5.5.4	2,454	2,324	2,324
(13) TOTAL ASSETS [= (11) + (12)]		31,634	37,763	46,736

(continued)

Table 5.26 (continued)

	Amounts in NOK million	Source of data for 2017	2015 ^a	2016 ^a	2017 ^b
(14) Equity		Section 5.5.5 [= Equity 2016 – Net loss 2017]	2,965	4,049	3,140 $= 4,049 - 909$
(15) Noncurrent liabilities, including:					20,959
(15a) Borrowings		Section 5.5.6	17,936	20,303	
(15b) Operating payables		Section 5.5.6	16,543	18,706	18,706
(16) Current (short-term) liabilities, including:					
(16a) Short term part of borrowings		Section 5.5.6	10,733	13,411	16,598
(16b) Operating payables		Section 5.5.6	3,041	4,769	4,769
(17) TOTAL EQUITY AND LIABILITIES [= (14) + (15) + (16)]			31,634	37,763	40,697

^aData extracted from Table 5.3

^bProspective data (not the actual financial results) estimated on the basis of assumptions presented in the preceding sections of the chapter
Source Annual reports of Norwegian Air Shuttle (for various fiscal years) and authorial computations

Table 5.27 Historical (for fiscal years 2015 and 2016) and prospective (for fiscal year 2017) condensed operating cash flows of Norwegian Air Shuttle

Amounts in NOK million	Source of data for 2017	2015 ^a	2016 ^a	2017 ^b
Profit before tax	Table 5.15	75	1,508	-1,212
Taxes paid	<i>Tax loss = no tax payable</i>	-44	-29	0
Depreciation and amortization	Table 5.15	1,133	1,296	1,377
Profit from associated companies	Table 5.15	-103	-213	-323
Net effects of financial activities and revaluations of financial assets	Table 5.15	25	-574	-453
Changes in working capital	Table 5.18 ^c	1,258	1,170	3,166
Other items (net)	Table 5.15 ^d	12	-112	642
Operating cash flows (OCF)		2,356	3,046	3,197

^aData extracted from Table 5.5

^bProspective data (not the actual financial results) estimated on the basis of assumptions presented in the preceding sections of the chapter

^cWorking capital = Inventory & Receivables (12a) – Noncurrent operating payables (15b) – Current operating payables (16b)

^d = – Interest income (4) – Interest expense (5)

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016 and authorial computations

mostly attributable to a sizeable positive contribution of a change in working capital (precisely, an increase in operating payables), combined with depreciation and amortization.

According to data disclosed in Table 5.30 (in Sect. 5.7 of this chapter), the Norwegian's actual operating cash flows, reported for fiscal year 2017, amounted to 2,901 NOK million. Since our simulation pointed to an amount of 3,197 NOK million, it implies a deviation of the actual operating cash flows from the simulated ones by less than 10%.

5.6 Consideration of Available Options for Bridging an Uncovered Funding Gap

An immediate conclusion, that has emerged from our entire preceding step-by-step prospective simulation, may be summarized as follows: **If, in 2017, Norwegian Air Shuttle goes on with its prior market expansion** (as manifested in a growth of the company's revenues, assets and general scale of operations), **while at the same time the average global oil price rises by about 30%, then the company would have to face a huge funding gap** (i.e. the shortage of funds on the right-hand side of its balance sheet). That funding gap would amount to about 6.0 NOK billion and obviously would have to be bridged somehow. Accordingly, the four available (at least theoretically) options of equalizing both sides of the Norwegian's prospective balance sheet, listed in the closing paragraphs of the preceding section, will be investigated below.

5.6.1 Issuance of New Equity Shares

On the first sight, obtaining proceeds from an issuance of new equity shares seems to constitute the most recommendable option, in light of the company's already high indebtedness (and its increased credit risk, as demonstrated in Sect. 5.3 of this chapter). A significant increase in equity would reduce the company's financial risks and should contribute to a stabilization of its financial standing.

Let's begin with an evaluation of an impact of the considered equity issuance on the Norwegian's indebtedness. If an amount of the new equity raised precisely matches our estimated funding gap, then the company's indebtedness ratio would change as follows:

- The total equity, as at the end of fiscal year 2017, would amount to **9,179 NOK million** [= 3,140 NOK million, as calculated in line 14 in Table 5.26 + Proceeds from issuance of new shares, equal to the funding gap of 6,039 NOK million].
- Total assets, as at the end of fiscal year 2017, would amount to **46,736 NOK million** (according to line 13 in Table 5.26).
- Consequently, the company's total indebtedness ratio (as a quotient of total liabilities to total assets), as at the end of fiscal year 2017, would fall to 80.4% [= (Total assets of 46,736 NOK million – Equity of 9,179 NOK million) / Total assets of 46,736 NOK million], from 90.6% and 89.3% as at the end of 2015 and 2016, respectively (according to our prior calculations presented in Table 5.4).

Accordingly, a by-product of a considered issuance of new equity shares (with proceeds amounting to 6,039 NOK million) would be a welcome reduction of the Norwegian's total indebtedness ratio, by almost nine percentage points (between the ends of 2016 and 2017). Even though the company's indebtedness would remain rather high, its noticeable reduction (despite its negative profitability) would to a large extent compensate for a rising financial risk, entailed by the company's incurred losses. So the new equity issuance seems to be a recommendable option, in light of the company's already high indebtedness, combined with losses simulated for fiscal year 2017. However, in practice a business life reality is not always that simple...

In order to examine the option of the new equity issuance more diligently, let's first calculate the Norwegian's market capitalization (that hugely affects a room for raising a new equity capital, in the amount needed to bridge the company's funding gap), as at the end of fiscal year 2016:

- On December 31, 2016, the Norwegian's listed shares had a closing price of NOK 2,870 (source: "*Norwegian Air Shuttle: Annual Report 2016*", p. 19).
- On December 31, 2016, the Norwegian's equity consisted of 35,759,639 ordinary shares (source: "*Norwegian Air Shuttle: Annual Report 2016*", p. 46, Note 15).

- Accordingly, at the end of fiscal year the Norwegian's market capitalization amounted to **10,263 NOK million** [= stock price of 2,870 NOK \times 35,759,639 shares / 1,000,000].

Suppose now, purely theoretically, that Norwegian Air Shuttle is able to sell its new equity shares, in 2017, for the same market price as at the end of fiscal year 2016 (i.e. for 2,870 NOK per one share), with no any negative impact on the prices of its old shares, traded on the Oslo Stock Exchange. Under such an assumption, the company's fair value, immediately after the issuance of its new shares, would increase to **16,302 NOK million** [= Actual market capitalization of 10,263 NOK million, as at the end of 2016 + Market value of new shares issued, amounting to 6,039 NOK million]. As a result, a combined share in equity, held by all the Norwegian's "old" shareholders, would be significantly diluted, **from 100 to 63%** [= 10,263 NOK million / 16,302 NOK million]. In other words, even such hypothetical and optimistic assumptions (about a possibility of issuing new shares for the price observed at the end of 2016) would probably entail a deep erosion of the share of previous shareholders in the company's new equity base.

However, it is very unlikely that Norwegian Air Shuttle would be able to sell its newly issued equity shares for the same price, as the actual quotation at the end of 2016 (particularly in light of the "rescue" nature of a considered equity issuance). So let's now suppose, still hypothetically, that the company's total market capitalization (after the issuance of new shares) would stay intact at 10,263 NOK million. Now the new shareholders would enjoy their combined share in the post-money equity of 58.8% [= 6,039 NOK million / 10,263 NOK million], implying **a dilution of the share of the Norwegian's "old" shareholders to only 41.2%**. Obviously, if the issuance of new shares entailed an erosion of the company's total market capitalization (to below the actual value as at the end of 2016), then the dilution effect, felt by its "old" shareholders, would be even stronger.

Due to such a dilution effect, demonstrated above, it is not uncommon that an issuance of new equity shares is avoided (rather than strived for) by heavily indebted and risky firms, even though in their case this source of capital often constitutes the most recommendable and prudent way of bridging a funding gap. In fact, as will be shown later in this chapter, this happened in Norwegian's case as well, since in 2017 the company's actual funding gap was "plugged" by a combination of sources other than new equity. Quite paradoxically, it ultimately wiped out the company's "old" shareholders almost entirely from the Norwegian's equity (i.e. such an "equity-hostile" approach to bridging the funding gap in 2017 ultimately eroded a share of the company's "old" shareholders to almost zero).

5.6.2 Further Increase in Indebtedness

Increased indebtedness constitutes an alternative (to new equity) source of funding, of course provided that a given company finds creditors willing and able to lend it an amount of money that it needs. Extended liabilities may come either from

larger amounts of operating payables (e.g. via lengthening the company's average deferred payment terms to its suppliers, if they accept it) or from an issuance of new financial debts (e.g. via new bank loans, new lease contracts, issuance of a given company's corporate bonds, etc.), or from a combination of both. Of course, an availability of new borrowings is one thing, but their economic cost (i.e. an interest rate) is another one, particularly in case of heavily indebted companies (which often must accept sharply increasing borrowing costs, as they get more and more indebted, to compensate creditors for their higher exposure to a default risk).

Let's hypothetically assume that in fiscal year 2017 Norwegian Air Shuttle bridges its entire funding gap (amounting to 6,039 NOK million) by increasing its liabilities. Under such an assumption, the company's estimated total liabilities, as at the end of 2017, would increase to **43,596 NOK million** [= Total noncurrent liabilities amounting to 20,959 NOK million, according to line 15 in Table 5.26 + Total current liabilities amounting to 16,598 NOK million, according to line 16 in Table 5.26 + New liabilities, amounting to 6,039 NOK million]. At the same time, the company's total assets would amount to **46,736 NOK million** (according to line 13 in Table 5.26). Accordingly, a direct consequence of borrowing more (with total liabilities rising by 6,039 NOK million) would be **a further increase in the Norwegian's already high indebtedness ratio, to 93.3%** [= 43,596 NOK million / 46,736 NOK million], from its previous year-end value of 89.3% (according to our prior calculations presented in Table 5.4). Therefore, an already heavily indebted company would emerge, from such a boost to its liabilities, as even more indebted one. Obviously, it seems a very risky proposition, particularly in light of the company's deeply negative simulated profitability in fiscal year 2017 (that strongly affects the company's capability of servicing its debt payments).

It should be noted here that an actual increase in the Norwegian's total indebtedness ratio would be more significant than simplistically estimated above (i.e. its indebtedness would rise to more than 93.3%), due to incremental interest expenses driven up by new debts, that would deepen the company's after-tax loss to below its amount computed in line 10 in Table 5.22 (which, in turn, would depress a carrying amount of the company's equity to below its value estimated in line 14 of Table 5.26). Accordingly, it is likely that increased borrowings (by an assumed amount of about 6.0 NOK billion) could boost the Norwegian's indebtedness ratio to about 95–96%.

All in all, bridging the Norwegian's funding gap, simulated for its fiscal year 2017, by a further increase in the company's liabilities, does not seem to constitute a recommendable option, in light of its already high indebtedness, combined with its simulated negative profitability in that period.

5.6.3 Reduction of the Company's Asset Base

Another option to consider, as an available way of bridging the Norwegian's uncovered funding gap, corresponds to a left-hand side of the company's balance sheet. If an issuance of new equity shares seems practically problematic (due to its deeply dilutive impact on the Norwegian's "old" shareholders), while a further increase in indebtedness seems overly risky and thus not recommendable (in light of the company's already high credit risk profile), then perhaps some "frozen" funds may be released from the owned assets, that have been tying up money so far? Let's first consider the following options (complementary, i.e. not competitive to each other), related to the Norwegian's current assets:

- Part of the company's receivable accounts, which combined with less material inventories amount to **3,794 NOK million** (according to a line 12a in Table 5.26), could perhaps be disposed of, via some factoring transactions. Obviously, it seems next-to-impossible to reduce this amount down to zero, but let's assume (entirely hypothetically and rather optimistically) that some **1.5-2.0 NOK billion** could be released from this source, net of financing expense entailed by such factoring transactions.
- Let's also hypothetically suppose that an entire amount of derivative financial instruments, amounting to **806 NOK million** (according to a line 12b in Table 5.26), could be realized (i.e. converted into cash), instead of ending the fiscal year 2017 as non-cash (uncollected yet) current assets.
- Finally, let's suppose (again, hypothetically and overly optimistically) that Norwegian Air Shuttle is able to reduce its cash balances, amounting to **2,324 NOK million** (according to a line 12c in Table 5.26), down to zero, without any disrupting consequences for its daily operations.

Those three hypothetical sources of funds, combined, would sum up to about **4.6-5.1 NOK billion** [= between 1.5 and 2.0 NOK billion from factoring of receivables + 0.8 NOK billion from cashing derivative financial instruments + 2.3 NOK billion from draining cash balances down to zero]. Consequently, even under the above hypothetical (and naively optimistic) assumptions, Norwegian would not be able to generate an amount that it needs (i.e. about 6.0 NOK billion, according to our simulation), from releasing money "frozen" in its liquid current assets. Some other sources (e.g. liabilities on the right-hand side of balance sheet or a disposal of some noncurrent assets) would still be needed.

The company might perhaps also have an option of releasing some funds tied up in its noncurrent operating assets, e.g. via:

- A disposal of some noncurrent assets that it currently does not use in its core business operations (e.g. idle airplanes or real-estate properties, if any).
- Sale-and-lease-back transactions, in which the company might dispose of some of its operating assets (that it uses) but lease them back immediately, with an immediate effect of obtaining a cash injection without a loss of an access to

the sold (and leased back) assets, that the company needs in its day-to-day operations.

5.6.4 Combination of More Than One of the Options

Finally, Norwegian might consider some mix of all three options discussed above, since they are not competitive to each other. For instance, it could release some funds tied up in its assets (say, 3.0 NOK billion) and bridge a remaining funding gap by a mix of proceeds from an issuance of new shares and new borrowings. Such crucial decisions (including trade-offs between risk and return) belong to the main tasks of corporate financial managers.

Such a hybrid approach to bridging the funding gap seems likely in case of Norwegian Air Shuttle, given the problems faced in case of each of the three individual options, that may be summarized as follows:

- Issuance of new shares would reduce the company's exposure to an insolvency risk, but it would immediately and deeply dilute equity interests of its "old" shareholders.
- Raising liabilities (e.g. via new borrowings), in turn, would not affect the Norwegian's ownership structure, but it would push its indebtedness even higher (from its already rather excessive level).
- Releasing money from the company's assets alone (i.e. without any material movements on the right-hand side of its balance sheet) does not seem to offer a possibility of collecting funds in an amount needed to bridge the simulated funding gap (i.e. about 60 NOK million).

5.7 Actual Developments in Fiscal Years 2017 and 2018

5.7.1 Oil Price Change and Norwegian's Accounting Earnings in Fiscal Year 2017

In 2017 the global oil price indeed reversed its prior falling trend. **The year-wide average global price of Brent Crude rose from 44.0 USD per barrel to 54.4 USD per barrel, i.e. by 23.5% y/r.** Obviously, it constituted a negative shift in the Norwegian's economic environment. Accordingly, it may be concluded that our hypothetical scenario (of a significant oil price increase in 2017) has materialized, even though an actual spike in oil price was lower than what had been assumed in our simulation (i.e. 23.5% y/y vs. 30.0% y/y, respectively).

So let's now check how the actual developments, regarding the changes in a global oil price observed in 2017, affected the Norwegian's operating expenses

Table 5.28 Simulated and actual operating results of Norwegian Air Shuttle in 2017

Amounts in NOK million	Simulated results (from Table 5.22)	Actual results (from Annual Report 2017)	Percent deviation of the actual results from the simulated ones
(1) Total operating revenue and income	31,096	30,948	-0.5
(2) Total OPEX, including:	31,989	32,951	3.0
(2a) Aviation fuel	7,028	7,339	4.4
(2b) Non-fuel operational expenses ^a	24,037	23,983	-0.2
(2c) Depreciation and amortization	1,377	1,405	2.0
<i>Impairment</i> ^b	-	656	N/A
(2d) Other losses (+) / gains (-), net	-453	-432	4.6
(3) EBIT [= (1) - (2)]	-893	-2,003	-124.3
EBIT adjusted for impairment [= (3) + “<i>Impairment</i>”]	-893	-1,347	-50.8

^a = Operational expenses (as reported in the income statement) + Other operating expenses (as reported in the income statement) – Aviation fuel (as reported in Note 05)

^b Item that was absent in the Norwegian's results reported in Annual Report 2016 (as well as absent in our financial statement simulation in all preceding sections), but which appeared in the company's income statement reported in Annual Report 2017

Source Annual Report of Norwegian Air Shuttle for fiscal year 2017 and authorial computations

and earnings (on the background of our simulated results). This is displayed in Table 5.28.

The numbers presented in Table 5.28 lead to the following conclusions:

- In case of revenues, as well as all individual items of operating expenses, deviations of actual accounting numbers from their simulated counterparts may be considered rather small (less than 5% in all cases), which seems to corroborate a general robustness of an analytical and forecasting approach, applied in the preceding sections of this chapter.
- In its fiscal year 2017 Norwegian reported a special charge, labeled as “*Impairment*”, amounting to 656 NOK million. That unpredictable one-off item (that captured write-downs of carrying amounts of aircraft, parts and installations on leased aircraft) depressed the company's reported operating earnings significantly, but it could have not been present in our model built to simulate the financial results in fiscal year 2017.
- In spite of an actual oil price increase being more moderate than what has been assumed in our simulation (i.e. 23.5% y/y vs. 30.0% y/y, respectively),

Table 5.29 Results on non-operating activities, pre-tax and after-tax losses of Norwegian Air Shuttle in fiscal year 2017

Amounts in NOK million	Simulated results (from Table 5.22)	Actual results (from Annual Report 2017)
(4) Interest income	44	71
(5) Interest expense	-686	-959
(6) Other financial income (+) / expenses (-)	0	35
(7) Share of profit from associated companies	323	292
(8) Profit before tax	-1,212	-2,562
(9) Income tax expense (-) / income (+)	303	768
(10) Profit for the year	-909	-1,794

Source Annual Report of Norwegian Air Shuttle for fiscal year 2017 and authorial computations

the Norwegian's aviation fuel costs exceeded our simulated amount by over 300 NOK million (i.e. by 4.4%).

- Our conservative assumptions (explained in Sect. 5.4.3), applied to Norwegian's “*Non-fuel operational expenses*”, were confirmed by a business reality. In light of a very small deviation of the actual number from the forecasted one (i.e. – 0.2%), our assumed further material increase in the company's CASK / RASK ratio turned out to have materialized.
- Despite small forecast errors on an individual-item level, our simulation underestimated the company's actual operating loss by a sizeable margin, since the latter turned out to be deeper than the former by as much as 124.3%. However, as discussed above, the Norwegian's reported operating loss was to a large extent attributable to a one-off impairment charge (that could have not been foreseen), amounting to 656 NOK million. Accordingly, the company's operating loss, stripped out from that unpredictable special charge, was deeper than our simulated one by slightly more than 50% (despite a smaller actual increase in a global oil price than the one assumed in our simulation).
- All in all, our “what if” analysis has turned out to be reliable and useful, in a sense that it had led to correct and relevant findings (that should have been treated as a strong warning signal), suggesting that even a not-so-dramatic increase in a global oil price (to a level still below its long-term average) could entirely wipe out the Norwegian's seemingly improving operating profits, reported by the company for fiscal years 2015 and 2016.

Data disclosed in Table 5.29, which compares the Norwegian's simulated and actual results on non-operating activities, as well as the company's pre-tax and after-tax earnings, lead to the following conclusions:

- In case of “*Interest income*”, as well as “*Interest expense*”, absolute values of the company's numbers, reported for fiscal year 2017, exceeded our preliminarily assumed amounts. It must be kept in mind, however, that our simulated

numbers did not constitute any forecast at all, but only reflected our preliminary assumptions (that could have been changed later on, after bridging the uncovered funding gap by an assumed financing source), according to which those numbers were kept intact, i.e. remained on their actual levels reported for fiscal year 2016.

- In fiscal year 2017 the company reported a slightly positive contribution (amounting to 35 NOK million) from “*Other financial income / expenses*”, as compared to a zero amount assumed for that income statement item in our simulation (based on an argument that it captures financial gains and losses that cannot be foreseen reliably). The actual (reported) number may have been considered rather immaterial, from a perspective of its impact on the company’s reported earnings. Accordingly, our simplistic assumption of its zero monetary amount has not distorted our entire analysis significantly.
- Our simplistic extrapolative forecast of “*Share of profit from associated companies*” (i.e. 323 NOK million) has overshot an actual amount reported by the company (i.e. 292 NOK million) by 31 NOK million, i.e. insignificantly from a perspective of a reliability of our entire “what if” analysis.
- In fiscal year 2017 the Norwegian’s reported pre-tax loss (amounting to 2,562 NOK million) was reduced by an income tax income of 768 NOK million, that to a large extent was attributable to tax-loss carryforwards (but also to various temporary book-tax differences). As a result, the company’s reported after-tax loss was not as deep as its pre-tax loss, similarly as in our simulation. This seems to confirm a reasonableness of our prior assumption about a positive contribution of the Norwegian’s income taxes to the company’s reported “bottom line”, in periods featured by its negative profitability.

5.7.2 Norwegian’s Actual Funding Gaps and Cash Flows in Fiscal Years 2017 and 2018

Consistently with our prior financial simulation, in fiscal year 2017 (as well as in 2018) Norwegian Air Shuttle indeed faced a deep funding gap, that must have been plugged somehow. Data disclosed in Table 5.30, which contains the Norwegian’s condensed cash flow statements for fiscal years 2017 and 2018, lead to the following conclusions:

- A pre-tax loss, amounting to about 2.6 NOK billion, was incurred also one year later, when a year-wide average global oil price rose further, again by over 20% y/y.
- The Norwegian’s operating cash flows remained positive in fiscal year 2017 (despite incurred accounting losses), but mostly due to a significant contribution from rising operating payables (i.e. **an increase in liabilities**), including air traffic settlement liabilities.

Table 5.30 Condensed cash flow statement of Norwegian Air Shuttle for fiscal years 2017 and 2018 (based on data reported in the company's annual report for fiscal year 2018)

Amounts in NOK million	2017	2018
Profit before tax	-2,562	-2,490
Taxes paid	35	-23
Depreciation and amortization	1,405	1,668
Profit from associated companies	-292	-129
Net effects of financial activities and revaluations of financial assets	789	852
Changes in working capital	3,151	701
Other items (net)	375	-116
Operating cash flows (OCF)	2,901	463
Investments in tangible fixed assets (including prepayments)	-8,382	-11,715
Proceeds from sales of tangible assets	4,861	2,933
Other items (net)	93	219
Investing cash flows (ICF)	-3,428	-8,563
Proceeds from borrowings (net of repayments)	3,719	6,028
Interest paid	-1,428	-1,500
Proceeds from issuing new shares	0	1,456
Financing cash flows (FCF)	2,291	5,984

Source Annual Report of Norwegian Air Shuttle for fiscal year 2018 and authorial computations

- In fiscal year 2018 the company's operating cash flows fell deeply (from 2,901 NOK million to 463 NOK million), despite a continued increase in operating payables (i.e. **an another increase in liabilities**).
- In face of its widening funding gap (stemming from deep losses and eroding amount of equity, combined with continued investment expenditures on new aircraft), the company:
- Disposed of its older airplanes, with total proceeds amounting to about 7.8 NOK billion [= 4.9 NOK billion in 2017 + 2.9 NOK billion in 2018], which brought less money than was needed for the company's continued expenditures on new aircraft, totaling about 20.1 NOK billion [= 8.4 NOK billion in 2017 + 11.7 NOK billion in the following period].
- Reacted to its eroding operating cash flows (that fell from 2.9 NOK billion in 2017 to less than half a billion in 2018), combined with more and more negative investing cash flows (that deepened from -3.4 NOK billion in 2017 to -11.7 NOK billion one year later), by boosting its financing cash inflows (which rose from 2.3 NOK billion in 2017 to almost 6.0 NOK billion in 2018).
- The Norwegian's **repeatedly positive and rising financing cash flows**, totaling 8.3 NOK billion [= 2.3 NOK billion in 2017 + 6.0 NOK billion in 2018], **mostly reflected the company's fast rising amounts of borrowings** (net of repayments), that grew by 9.7 NOK billion [= 3.7 NOK billion in 2017 + 6.0 NOK billion in 2018].

- In contrast, the Norwegian's **proceeds from an issuance of new shares appeared only in fiscal year 2018 and amounted to a rather modest cash inflow** of about 1.5 NOK billion.

To sum up, the company has reacted to its deteriorating financial performance (manifested in its deep losses incurred in both 2017 and 2018), and its widening funding gap, by raising its already high level of indebtedness (supplemented by significant proceeds from disposals of tangible assets), instead of issuing new equity shares (that brought mere 1.5 NOK billion, and only in fiscal year 2018). Accordingly, the company's financing policy seemed entirely opposite to what was recommended earlier in the chapter.

5.7.3 Norwegian's Ultimate Bankruptcy and "Epitaph"

The Norwegian's ultimate flight to its financial default, across fiscal years 2019 and 2020, may be chronologized as follows:

- In 2019 the company's managers did their best to boost its financial liquidity, by disposing of a large chunk of its tangible assets (that brought almost 7.0 NOK billion) as well as its financial assets (with total proceeds amounting to over 2.2 NOK billion).
- In 2019 the company also obtained proceeds from an issuance of new shares, for a total amount of almost 4.0 NOK billion.
- At the same time, Norwegian initiated an ambitious cost-cutting program and announced a plan to reduce its capacity further, by 10% in 2020.
- All those efforts have turned out insufficient, in light of the company's maturing bonds, combined with an outbreak of the global COVID-19 pandemic (that in the first half of 2020 grounded most of the commercial airplanes operated worldwide).
- Consequently, as part of the rescue efforts, in May 2020 the company's shareholders backed a large debt-to-equity swap, whereby aircraft leasing companies, as well as some other Norwegian's creditors, obtained such a high interest in its increased equity that they virtually wiped out all "old" shareholders. The company also applied for government-backed loan guarantees.
- In spite of all those emergency activities (and with headwinds from a deteriorating global pandemic situation), in November 2020 Norwegian Air Shuttle surrendered and filed for a bankruptcy protection.

Appendix: Published Financial Statements of Norwegian Air Shuttle for Fiscal Years 2015 and 2016

See Tables [5.31](#), [5.32](#), [5.33](#), and [5.34](#).

Table 5.31 Consolidated income statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)

Amounts in NOK thousand	2016 ^a	2015 ^a
Revenue	25,950,554	22,483,544
Other income	103,971	7,603
Total operating revenue and income	26,054,525	22,491,148
Operational expenses	18,024,344	15,839,048
Payroll	3,971,412	3,433,703
Depreciation, amortization and impairment	1,295,825	1,133,287
Other operating expenses	1,519,111	1,263,185
Other losses / (gains) – net	(576,553)	474,150
Total operating expenses	24,234,139	22,143,372
Operating profit	1,820,386	347,775
Interest income	43,623	74,181
Interest expense	685,990	463,348
Other financial income (expenses)	117,513	12,988
Net financial items	(524,854)	(376,178)
Share of profit from associated companies	212,801	103,441
Profit before tax	1,508,333	75,038
Income tax expense (income)	373,353	(171,114)
Profit for the year	1,134,981	246,152

^aThe original (reported) order of both columns differs from the one used in the chapter (where a time-scale moves from the left to the right)

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

Table 5.32 Consolidated balance sheet (Assets) of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)

Amounts in NOK thousand	2016 ^a	2015 ^a
ASSETS		
Noncurrent assets		
Intangible assets	198,260	206,675
Deferred tax asset	241,499	593,626
Aircraft, parts and installations on leased aircraft	22,571,775	18,507,706
Equipment and fixtures	88,361	79,508
Buildings	283,236	285,674
Derivative financial instruments	114,476	–
Financial assets available for sale	82,689	82,689
Investment in associate	609,110	328,127
Prepayment to aircraft manufacturers	7,156,303	5,939,281
Other receivables	623,606	501,811
Total noncurrent assets	31,969,314	26,525,096
Current assets		
Inventory	102,465	104,141
Trade and other receivables	3,013,978	2,550,716
Derivative financial instruments	353,246	–
Cash and cash equivalents	2,323,647	2,454,160
Total current assets	5,793,337	5,109,017
Total assets	37,762,651	31,634,113

^aThe original (reported) order of both columns differs from the one used in the chapter (where a time-scale moves from the left to the right)

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

Table 5.33 Consolidated balance sheet (Equity and liabilities) of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)

Amounts in NOK thousand	2016 ^a	2015 ^a
EQUITY AND LIABILITIES		
Equity		
Share capital	3,576	3,576
Share premium	1,231,631	1,231,631
Other paid-in equity	110,621	94,362
Other reserves	773,112	876,192
Retained earnings	1,919,266	759,550
Shareholders' equity	4,038,205	2,965,312
Non-controlling interest	10,770	–
Total equity	4,048,975	2,965,312
Noncurrent liabilities		
Pension obligation	107,379	134,516
Provision for periodic maintenance	1,376,465	1,177,513
Other long-term liabilities	85,166	80,338
Borrowings	18,706,062	16,543,405
Derivative financial instruments	27,939	–
Total noncurrent liabilities	20,303,010	17,935,772
Short term liabilities		
Short term part of borrowings	4,768,813	3,041,388
Trade and other payables	3,881,684	2,862,566
Air traffic settlement liabilities	4,666,212	4,014,428
Derivative financial instruments	86,306	782,523
Tax payable	7,650	32,123
Total short-term liabilities	13,410,666	10,733,029
Total liabilities	33,713,676	28,668,801
Total equity and liabilities	37,762,651	31,634,113

^aThe original (reported) order of both columns differs from the one used in the chapter (where a time-scale moves from the left to the right)

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

Table 5.34 Consolidated cash flow statement of Norwegian Air Shuttle for fiscal years 2015 and 2016 (as published in the company's annual report for fiscal year 2016)

Amounts in NOK thousand	2016 ^a	2015 ^a
Cash flows from operating activities:		
Profit before tax	1,508,333	75,038
Taxes paid	(28,622)	(44,056)
Depreciation, amortization and impairment	1,295,825	1,133,287
Pension expense without cash effect	(27,137)	5,480
Profit from associated companies	(212,801)	(103,441)
Compensation expense for employee options	16,259	7,141
Losses/(gains) on disposal of tangible assets	(101,103)	–
Fair value losses / (gains) on financial assets	(576,553)	474,149
Realized effects from currency and derivative contracts	(566,109)	(899,161)
Financial items	524,854	376,178
Interest received	43,623	74,172
Change in inventories, receivables and payables	(183,056)	(292,082)
Change in air traffic settlement liabilities	651,784	1,049,001
Change in other current assets and current liabilities	701,175	501,000
Net cash flow from operating activities	3,046,473	2,356,707
Cash flows from investing activities:		
Prepayments aircraft purchase	(3,474,816)	(3,138,767)
Purchase of tangible assets	(4,525,827)	(2,022,951)
Purchase of intangible assets	(31,038)	(45,685)
Proceeds from sales of tangible assets	1,584,509	18,250
Proceeds from sales of shares in subsidiaries [...]	1,698	–
Payment to associated companies	(66,950)	–
Net cash flow from investing activities	(6,512,425)	(5,189,153)
Cash flows from financial activities:		
Proceeds from long-term debt	5,805,813	5,553,592
Payment of long-term debt	(1,572,788)	(1,827,543)
Interest on borrowings	(941,890)	(581,903)
Proceeds from issuing new shares	–	138,142
Other financing activities	11,698	–
Net cash flow from financial activities	3,302,834	3,282,288
Foreign exchange effect on cash	32,606	(6,820)
Net change in cash and cash equivalents	(130,513)	443,021
Cash and cash equivalents at January 1	2,454,160	2,011,139
Cash and cash equivalents at December 31	2,323,647	2,454,160

^aThe original (reported) order of both columns differs from the one used in the chapter (where a time-scale moves from the left to the right)

Source Annual Report of Norwegian Air Shuttle for fiscal year 2016

References

- Bajaj, M., Denis, D. J., & Sarin, A. (2004). Mean Reversion in Earnings and the Use of E/P Multiples in Corporate Valuation. *Journal of Applied Finance*, 14, s.4–5.
- Fama, E. F., & French, K. R. (1999). *Forecasting Profitability and Earnings* (Center for Research in Security Prices Working Papers).
- Hwang, M., Keil, M., & Smith, G. (1995). Shrunken Earnings Predictions Are Better Predictions. *Applied Financial Economics*, 14, 937–943.
- Loomis C. J. (2001, February 5). The 15% Delusion. *Fortune*, pp. 102–108.
- Rothovius, T. (2008). *Earnings and Analysts' Forecasts*. University of Oulu.
- Zweig J. (2001, January). A Matter of Expectations. *Money*, pp. 49–50.



Correction to: Real-Life Case Study: A Flight to a Bankruptcy of Norwegian Air Shuttle

Correction to:

**Chapter 5 in: J. Welc, *Evaluating Corporate Financial Performance*,
https://doi.org/10.1007/978-3-030-97582-1_5**

The original version of Chapter 5 was previously published with an incorrect text in Table 5.33, which has now been corrected. The chapter has been updated with the change.

The updated original version for this chapter can be found at https://doi.org/10.1007/978-3-030-97582-1_5

References

- Alfredson, K., Leo, K., Picker, R., Loftus, J., Clark, K., & Wise, V. (2009). *Applying International Financial Reporting Standards*. Wiley.
- Altman, E. I. (1968). Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *Journal of Finance*, 23, 589–609.
- Altman, E. I. (2002). *Bankruptcy*. Blackwell.
- Amat, O. (2019). *Detecting Accounting Fraud Before It's Too Late*. Wiley.
- Atrill, P. (2000). *Financial Management for Non-Specialists*. Pearson Education Limited.
- Aziz, A., Emanuel, D., & Lawson, G. (1988). Bankruptcy Prediction: An Investigation of Cash Flow Based Models. *Journal of Management Studies*, 25, 419–437.
- Badrinath, S. G., Gay, G. D., & Kale, J. R. (1989). Patterns of Institutional Investment, Prudence, and the Managerial ‘Safety-Net’ Hypothesis. *Journal of Risk and Insurance*, 56, 605–629.
- Bajaj, M., Denis, D. J., & Sarin, A. (2004). Mean Reversion in Earnings and the Use of E/P Multiples in Corporate Valuation. *Journal of Applied Finance*, 14, s.4–5.
- Bancel, F., & Mittoo, U. R. (2014). The Gap Between Theory and Practice of Firm Valuation: Survey of European Valuation Experts. *Journal of Applied Corporate Finance*, 26, 106–117.
- Barefield, R., & Comiskey, E. (1972). The Smoothing Hypothesis: An Alternative Test. *The Accounting Review*, 47, 291–298.
- Barnea, A., Ronen, J., & Sadan, S. (1975). The Implementation of Accounting Objectives—An Application to Extraordinary Items. *The Accounting Review*, 50, 58–68.
- Barth, M. E., Elliott, J. A., & Finn, M. W. (1999). Market Rewards Associated with Patterns of Increasing Earnings. *Journal of Accounting Research*, 37, 387–413.
- Barwise, P., Higson, C., Likierman, A., & Marsh, P. (1989). *Accounting for Brands*. London Business School and the Institute of Chartered Accountants in England and Wales.
- Beattie, V., Brown, S., Ewers, D., John, B., Manson, S., Thomas, D., & Turner, M. (1994). Extraordinary Items and Income Smoothing: A Positive Accounting Approach. *Journal of Business Finance & Accounting*, 21, 791–811.
- Beaver, W. H. (1966). Financial Ratios as Predictors of Failure. *Journal of Accounting Research*, 5, 71–111.
- Beaver, W. H., McNichols, M., & Rhie, J. W. (2005). Have Financial Statements Become Less Informative? Evidence from the Ability of Financial Ratios to Predict Bankruptcy. *Review of Accounting Studies*, 10, 93–122.
- Becker, C. L., DeFond, M. L., Jiambalvo, J., & Subramanyam, K. R. (1998). The Effect of Audit Quality on Earnings Management. *Contemporary Accounting Research*, 15, 1–24.
- Begley, T. (2013). *The Real Costs of Corporate Credit Ratings* (Working Paper No. 1230). Ross School of Business.
- Beidleman, C. (1973). Income Smoothing: The Role of Management. *The Accounting Review*, 48, 653–667.

- Beneish, M. D. (1999). The Detection of Earnings Manipulation. *Financial Analysts Journal*, 55, 24–36.
- Bergevin, P. M. (2002). *Financial Statement Analysis. An Integrated Approach*. Prentice Hall.
- Bhandari, S., & Iyer, R. (2013). Predicting Business Failure Using Cash Flow Statement Based Measures. *Managerial Finance*, 39, 667–676.
- Burgstahler, D., Jiambalvo, J., & Shevlin, T. (2002). Do Stock Prices Fully Reflect the Implications of Special Items for Future Earnings? *Journal of Accounting Research*, 40, 585–612.
- Cahan, S. F., Chavis, B. M., & Elmendorf, R. G. (1997). Earnings Management of Chemical Firms in Response to Political Costs from Environmental Legislation. *Journal of Accounting, Auditing & Finance*, 12, 37–65.
- Caouette, J. B., Altman, E. I., Narayanan, P., & Nimmo, R. W. J. (2008). *Managing Credit Risk. The Great Challenge for Global Financial Markets*. Wiley.
- Carlson, S. J., & Bathala, C. T. (1997). Ownership Differences and Firms' Income Smoothing Behavior. *Journal of Business Finance and Accounting*, 24, 179–196.
- Casey, C., & Bartczak, N. (1985). Using Operating Cash Flow Data to Predict Financial Distress: Some Extensions. *Journal of Accounting Research*, 23, 384–401.
- Caylor, M. (2009). Strategic Revenue Recognition to Achieve Earnings Benchmarks. *Journal of Accounting and Public Policy*, 29, 82–95.
- Chan, K., Chan, L. K. C., Jegadeesh, N., & Lakonishok, J. (2006). Earnings Quality and Stock Returns. *Journal of Business*, 79, 1041–1082.
- Chan, L. K. C., Lakonishok, J., & Sougiannis, T. (2001). The Stock Market Valuation of Research and Development Expenditures. *Journal of Finance*, 56, 2431–2456.
- Charalambous, C., Charitou, A., & Kaourou, F. (2000). Comparative Analysis of Artificial Neural Network Models: Application in Bankruptcy Prediction. *Annals of Operations Research*, 99, 403–425.
- Chava, S., & Jarow, R. A. (2004). Bankruptcy Prediction with Industry Effects. *Review of Finance*, 8, 537–569.
- Chen, J. J., Xiao, X., & Cheng, P. (2011). Related Party Transactions as a Source of Earnings Management. *Applied Financial Economics*, 21, 165–181.
- Cheng, Q., & Warfield, T. D. (2005). Equity Incentives and Earnings Management. *The Accounting Review*, 80, 441–476.
- Chi, J., & Gupta, M. (2009). Overvaluation and Earnings Management. *Journal of Banking & Finance*, 33, 1652–1663.
- Cready, W. M., Lopez, T. J., & Sisneros, C. A. (2012). Negative Special Items and Future Earnings: Expense Transfer or Real Improvements? *The Accounting Review*, 87, 1165–1195.
- Damodaran, A. (1996). *Investment Valuation. Tools and Techniques for Determining the Value of Any Asset*. Wiley.
- Dascher, P., & Malcolm, R. (1970, Autumn). A Note on Income Smoothing in the Chemical Industry. *Journal of Accounting Research*, 8, 253–260.
- David, F. R. (2011). *Strategic Management. Concepts and Cases*. Prentice Hall.
- Dechow, P. M., Ge, W., Larson, C. R., & Sloan, R. G. (2011). Predicting Material Accounting Misstatements. *Contemporary Accounting Research*, 28, 17–82.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. (1996). Causes and Consequences of Earnings Manipulation: An Analysis of Firms Subject to Enforcement Actions by the SEC. *Contemporary Accounting Research*, 13, 1–36.
- De La Torre, I. (2009). *Creative Accounting Exposed*. Palgrave Macmillan.
- Demerjian, P. (2007). *Financial Ratios and Credit Risk: The Selection of Financial Ratio Covenants in Debt Contracts* (AAA 2007 Financial Accounting and Reporting Section [FARS] Meeting Paper).
- Demerjian, P. (2009). *Information, Monitoring, and Manipulation: The Economic Role of Covenant Measurement* (AAA 2010 Financial Accounting and Reporting Section [FARS] Papers).
- Demiroglu, C., & James, C. (2010). The Information Content of Bank Loan Covenants. *The Review of Financial Studies*, 23, 3700–3737.

- DePamphilis, D. M. (2010). *Mergers, Acquisitions and Other Restructuring Activities. An Integrated Approach to Process, Tools, Cases and Solutions*. Elsevier.
- Dickinson, V. (2011). Cash Flow Patterns as a Proxy for Firm Life Cycle. *The Accounting Review*, 86, 1969–1994.
- Dodge, R. (1996). *Group Financial Statements*. Chapman & Hall.
- Doris, L. (1950). *Corporate Treasurer's and Controller's Handbook*. Prentice-Hall.
- Eisele, A. (2012). *Target Shooting? Benchmark-Driven Earnings Management in Germany*. Dissertation of the University of St. Gallen, School of Management, Economics, Law, Social Sciences and International Affairs to obtain the title of Doctor of Philosophy in Management.
- Elliott, B., & Elliott, J. (2011). *Financial Accounting and Reporting*. Pearson Education Limited.
- Epstein, L. (2009). *The Complete Idiot's Guide to Value Investing*. Penguin Group.
- Erickson, M., Hanlon, M., & Maydew, E. L. (2004). How Much Will Firms Pay for Earnings That Do Not Exist? Evidence of Taxes Paid on Allegedly Fraudulent Earnings. *The Accounting Review*, 79, 387–408.
- Evans, F. C., & Bishop, D. M. (2001). *Valuation for M&A Building Value in Private Companies*. Wiley.
- Fairfield, P. M., Whisenant, J. S., & Yohn, T. L. (2003). Accrued Earnings and Growth: Implications for Future Profitability and Market Mispricing. *The Accounting Review*, 78, 353–371.
- Fama, E. F., & French, K. R. (1999). *Forecasting Profitability and Earnings* (Center for Research in Security Prices Working Papers).
- Fan, Y., Barua, A., Cready, W. M., & Thomas, W. B. (2010). Managing Earnings Using Classification Shifting: Evidence from Quarterly Special Items. *The Accounting Review*, 85, 1303–1323.
- Fan, Y., Thomas, W. B., & Yu, X. (2016). *The Impact of Financial Covenants in Private Loan Contracts on Classification Shifting*. SSRN Electron. J. <https://ssrn.com/abstract=2675191>
- Feleaga, L., Dragomir, V., & Feleaga, N. (2010). *National Accounting Culture and the Recognition of Provisions: An Application of the Prudence Principle*. Crises et Nouvelles Problematiques de la Valeur, Nice.
- Fernandez, P. (2002). *Valuation Using Multiples. How Do Analysts Reach Their Conclusions?* IESE Business School Research Papers.
- Flower, J., & Ebbers, G. (2002). *Global Financial Reporting*. Palgrave Macmillan.
- Francis, J., LaFond, R., Olsson, P. M., & Schipper, K. (2004). Costs of Equity and Earnings Attributes. *The Accounting Review*, 79, 967–1010.
- Frank, M. Z., & Goyal, V. K. (2003). *Capital Structure Decisions*. AFA 2004 San Diego Meetings. <http://ssrn.com/abstract=396020>
- Fridson, M., & Alvarez, F. (2002). *Financial Statement Analysis: A Practitioner's Guide*. Wiley.
- Fudenberg, D., & Tirole, J. (1995). A Theory of Income and Dividend Smoothing Based on Incumbency Rents. *Journal of Political Economy*, 103, 75–93.
- Ganguin, B., & Bilardello, J. (2005). *Fundamentals of Corporate Credit Analysis*. McGraw-Hill.
- Gentry, J. A., Newbold, P., & Whitford, D. T. (1985). Predicting Bankruptcy: If Cash Flow's Not the Bottom Line, What Is? *Financial Analysts Journal*, 41, 47–58.
- Gilbert, L. R., Menon, K., & Schwartz, K. B. (1990). Predicting Bankruptcy for Firms in Financial Distress. *Journal of Business, Finance and Accounting*, 17, 161–171.
- Gilson, S. C., John, K., & Lang, L. H. P. (1990). Troubled Debt Restructurings: An Empirical Study of Private Reorganization of Firms in Default. *Journal of Financial Economics*, 27, 315–353.
- Giroux, G. (2004). *Detecting Earnings Management*. Wiley.
- Giroux, G. (2006). *Earnings Magic and the Unbalance Sheet. The Search for Financial Reality*. Wiley.
- Graham, B., & Dodd, D. (1934). *Security Analysis*. McGraw-Hill.
- Graham, J. R., Campbell, R. H., & Rajgopal, S. (2006). The Economic Implications of Corporate Financial Reporting. *Financial Analysts Journal*, 62, 27–39.
- Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The Economic Implications of Corporate Financial Reporting. *Journal of Accounting and Economics*, 40, 3–73.
- Gray, I., & Manson, S. (2011). *The Audit Process. Principles, Practice and Cases*. South-Western Cengage Learnings, Andover.

- Greenwald, B. C. N., Kahn, J., Sonkin, P. D., & Van Biema, M. (2001). *Value Investing. From Graham to Buffett and Beyond.* Wiley.
- Griffiths, I. (1990). *Creative Accounting. How to Make Your Profits What You Want Them to Be.* Unwin Hyman Limited.
- Gu, Z., & Zhao, J. Y. (2006). *Information Precision and the Cost of Debt* (Carnegie Mellon University Working Papers).
- Gupta, J., Wilson, N., Gregoriou, A., & Healy, J. (2014). The Value of Operating Cash Flow in Modeling Credit Risk for SMEs. *Applied Financial Economics*, 24, 649–660.
- Hackel, K. S. (2011). *Security Valuation and Risk Analysis. Assessing Value in Investment Decision Making.* McGraw-Hill.
- Hackel, K. S., & Livnat, J. (1996). *Cash Flow and Security Analysis.* Irwin.
- Hanlon, M. (2005). The Persistence and Pricing of Earnings, Accruals and Cash Flows When Firms Have Large Book-Tax Differences. *The Accounting Review*, 80, 137–166.
- Hayes, R., Dassen, R., Schilder, A., & Wallage, P. (2005). *Principles of Auditing. An Introduction to International Standards on Auditing.* Pearson Education.
- Healy, P. M., Myers, S. C., & Howe, C. D. (2002). R&D Accounting and the Tradeoff Between Relevance and Objectivity. *Journal of Accounting Research*, 40, 677–710.
- Healy, P. M., & Wahlen, J. M. (1999). A Review of the Earnings Management Literature and Its Implications for Standard Setting. *Accounting Horizons*, 13, 365–383.
- Helfert, E. A. (1997). *Techniques of Financial Analysis. A Practical Guide to Managing and Measuring Business Performance.* Irwin.
- Higgins, R. C. (2000). *Analysis for Financial Management.* McGraw-Hill.
- Holthausen, R. W., Larcker, D. F., & Sloan, R. G. (1995). Annual Bonus Schemes and the Manipulation of Earnings. *Journal of Accounting and Economics*, 19, 29–74.
- Howard, M. (2008). *Accounting and Business Valuation Methods. How to Interpret IFRS Accounts.* Elsevier.
- Hunt, A., Moyer, S. E., & Shevlin, T. (2000). *Earnings Volatility, Earnings Management, and Equity Value* (University of Washington Working Papers).
- Hwang, M., Keil, M., & Smith, G. (1995). Shrunken Earnings Predictions Are Better Predictions. *Applied Financial Economics*, 14, 937–943.
- Jackson, C. W. (2006). *Business Fairy Tales.* Grim Realities of Fictitious Financial Reporting. Thomson.
- Jackson, C. W. (2015). *Detecting Accounting Fraud. Analysis and Ethics.* Pearson.
- Jantadej, P. (2006). *Using the Combinations of Cash Flow Components to Predict Financial Distress.* ETD Collection for University of Nebraska—Lincoln (AAI3216429).
- Jones, C. P. (1998). *Investments Analysis and Management.* Wiley.
- Jones, M. (Eds.). (2011). *Creative Accounting, Fraud and International Accounting Scandals.* Wiley.
- Jung, B., Soderstrom, N., & Yang, S. (2012). Earnings Smoothing Activities of Firms to Manage Credit Ratings. *Contemporary Accounting Research*, 30, 1–14.
- Jung, M., You, S., Chi, S., Yu, I., & Hwang, B. G. (2018). The Relationship Between Unbilled Accounts Receivable and Financial Performance of Construction Contractors. *Sustainability*, 10, 645–676.
- Jury, T. (2012). *Cash Flow Analysis and Forecasting. The Definitive Guide to Understanding and Using Published Cash Flow Data.* Wiley.
- Ketz, J. E. (2004). *Hidden Financial Risk. Understanding Off-Balance Sheet Accounting.* Wiley.
- Key, K. G. (1997). Political Cost Incentives for Earnings Management in the Cable Television Industry. *Journal of Accounting and Economics*, 23, 309–337.
- Khan, A. H., & Guruli, M. R. (2015). Predicting Bankruptcy by Liquidity Ratios Analysis. *Journal UMP Social Sciences and Technology Management*, 3, 372–380.
- Khandani, B., Lozano, M., & Cart, L. (2001). *Moody's RiskCalc for Private Companies: The German Model.* Moody's Investors Service.
- Kieso, D. E., Weygandt, J. J., & Warfield, T. D. (2010). *Intermediate Accounting.* Wiley.

- Kothari, S. P., Laguerre, T. E., & Leone, A. J. (2002). Capitalization versus Expensing: Evidence on the Uncertainty of Future Earnings from Capital Expenditures versus R&D Outlays. *Review of Accounting Studies*, 7, 355–382.
- Kraft, T. (2012). Rating Agency Adjustments to GAAP Financial Statements and Their Effect on Ratings and Credit Spreads. *The Accounting Review*, 90, 641–674.
- Kwon, K. H., & Lee, N. (2019). Unbilled Receivables, Loss Allowances and Earnings Management. *Academy of Accounting and Financial Studies Journal*, 23, 1–11.
- Leder, M. (2003). *Financial Fine Print. Uncovering a Company's True Value*. Wiley.
- Lee, H. A., & Choi, W. W. (2016). Allowance for Uncollectible Accounts as a Tool for Earnings Management: Evidence from South Korea. *International Journal of Accounting & Information Management*, 24, 162–184.
- Lee, T., Ingram, R., & Howard, T. (1999). The Difference Between Earnings and Operating Cash Flow as an Indicator of Financial Reporting Fraud. *Contemporary Accounting Research*, 16, 749–786.
- Lev, B. (2003, September). Remarks on the Measurement, Valuation, and Reporting on Intangible Assets. *FRBNY Economic Policy Review*, 9, 17–22.
- Lev, B., & Nissim, D. (2004). Taxable Income, Future Earnings and Equity Values. *The Accounting Review*, 79, 1039–1074.
- Lev, B., Sarath, B., & Sougiannis, T. (2005). R&D Reporting Biases and Their Consequences. *Contemporary Accounting Research*, 22, 977–1026.
- Lev, B., & Zarowin, P. (1999). The Boundaries of Financial Reporting and How to Extend Them. *Journal of Accounting Research*, 37, 353–385.
- Lewis, R., & Pendrill, D. (2004). *Advanced Financial Accounting*. Pearson Education Limited.
- Li, N. (2016). Performance Measures in Earnings-Based Financial Covenants in Debt Contracts. *Journal of Accounting Research*, 54, 1149–1186.
- Li, S., & Richie, N. (2009). *Income Smoothing and the Cost of Debt* (Wilfrid Laurier University Working Papers).
- Lie, H., & Lie, E. (2002). Multiples Used to Estimate Corporate Value. *Financial Analysts Journal*, 58, 44–54.
- Loomis C. J. (2001, February 5). The 15% Delusion. *Fortune*, pp. 102–108.
- Loughran, T., & McDonald, B. (2011). Barron's Red Flags: Do They Actually Work? *Journal of Behavioral Finance*, 12, 90–97.
- Mackenzie, B., Coetsee, D., Njikizana, T., Chamboko, R., Colywas, B., & Hanekom, B. (2012). *Interpretation and Application of International Financial Reporting Standards*. Wiley.
- Marquardt, C. A., & Wiedman, C. I. (2010). How Are Earnings Managed? An Examination of Specific Accruals. *Contemporary Accounting Research*, 21, 461–491.
- McNichols, M., & Wilson, G. P. (1988). Evidence of Earnings Management from the Provision for Bad Debts. *Journal of Accounting Research*, 26, 1–31.
- Millichamp, A., & Taylor, J. (2008). *Auditing*. South-Western Cengage Learnings.
- Monks, R. A. G., & Lajoux, A. R. (2011). *Corporate Valuation for Portfolio Investment. Analyzing Assets, Earnings, Cash Flows, Stock Price, Governance, and Special Situations*. Wiley.
- Montier, J. (2009). *Value Investing. Tools and Techniques for Intelligent Investment*. Wiley.
- Moody's Investor Service: Moody's Approach to Global Standard Adjustments in the Analysis of Financial Statements for Non-Financial Corporations. December 21, 2010.
- Moyer, R. C., McGuigan, J. R., & Kretlow, W. J. (1995). *Contemporary Financial Management*. West Publishing Company.
- Mulford, C. W., & Comiskey, E. E. (1996). *Financial Warnings. Detecting Earnings Surprises, Avoiding Business Troubles, Implementing Corrective Strategies*. Wiley.
- Mulford, C. W., & Comiskey, E. E. (2002). *The Financial Numbers Game Detecting Creative Accounting Practices*. Wiley.
- Mulford, C. W., & Comiskey, E. E. (2005). *Creative Cash Flow Reporting. Uncovering Sustainable Financial Performance*. Wiley.

- Mulford, C. W., & Dar, M. (2012). Misleading Signals from Operating Cash Flow in the Presence of Non-Controlling Interests. *The Journal of Applied Research in Accounting and Finance*, 7, 2–13.
- Myers, J., Myers, L., & Skinner, D. (2007). Earnings Momentum and Earnings Management. *Journal of Accounting, Auditing & Finance*, 22, 249–284.
- Naser, K. H. M. (1993). *Creative Financial Accounting. Its Nature and Use*. Prentice Hall.
- Nelson, M. W., Elliott, J. A., & Tarpley, R. L. (2003). How Are Earnings Managed? Examples from Auditors. *Accounting Horizons*, 17, 17–35.
- Nissim, D., & Penman, S. H. (2003). Financial Statement Analysis of Leverage and How It Informs About Profitability and Price-to-Book Ratios. *Review of Accounting Studies*, 8, 531–560.
- O'Glove, T. L. (1987). *Quality of Earnings. The Investor's Guide to How Much Money a Company Is Really Making*. The Free Press.
- Ohlson, J. A. (1980). Financial Ratios and the Probabilistic Prediction of Bankruptcy. *Journal of Accounting Research*, 18, 109–131.
- Palepu, K. G., Healy, P. M., & Bernard, V. L. (2004). *Business Analysis & Valuation Using Financial Statements*. Thomson South-Western.
- Palepu, K. G., Healy, P. M., & Peek, E. (2013). *Business Analysis and Valuation IFRS*. Cengage Learning.
- Peek, E. (2004). The Use of Discretionary Provisions in Earnings Management: Evidence from the Netherlands. *Journal of International Accounting Research*, 3, 27–43.
- Penman, S. H. (2003). The Quality of Financial Statements: Perspectives from the Recent Stock Market Bubble. *Accounting Horizons*, 17, 77–96.
- Penman, S. H. (2009). Accounting for Intangible Assets: There Is Also an Income Statement. *A Journal of Accounting, Finance and Business Studies*, 45, 358–371.
- Penman, S. H., & Zhang, X.-J. (2002). Accounting Conservatism, the Quality of Earnings, and Stock Returns. *The Accounting Review*, 77, 237–264.
- Persons, O. (1995). Using Financial Statement Data to Identify Factors Associated with Fraudulent Financial Reporting. *Journal of Applied Business Research*, 11, 38–46.
- Philips, J., Pincus, M., & Rego, S. (2003). Earnings Management: New Evidence Based on the Deferred Tax Expense. *The Accounting Review*, 78, 491–522.
- Philips, J., Pincus, M., Rego, S., & Wan, H. (2004). Decomposing Changes in Deferred Tax Assets and Liabilities to Isolate Earnings Management Activities. *The Journal of the American Taxation Association*, 26, 43–66.
- Powell, L., Jubb, C., De Lange, P., & Langfield-Smith, K. (2005). *The Distinction Between Aggressive Accounting and Financial Reporting Fraud: Perceptions of Auditors*. AFAANZ Conference 2005.
- Pratt, S. P. (2001). *The Market Approach to Valuing Businesses*. Wiley.
- Pratt, S. P., & Niculita, A. V. (2008). *Valuing a Business. The Analysis and Appraisal of Closely Held Companies*. McGraw-Hill.
- Previts, G. J., Bricker, R. J., Robinson, T. R., & Young, S. J. (1994). A Content Analysis of Sell-Side Financial Analyst Company Reports. *Accounting Horizons*, 8, 55–70.
- Public Company Accounting Oversight Board (PCAOB). (2017). *Auditing Standards of the Public Company Accounting Oversight Board (AS 2401: Consideration of Fraud in a Financial Statement Audit)*. PCAOB.
- Reider, R., & Heyler, P. B. (2003b). *Managing Cash Flow. An Operational Focus*. Wiley.
- Revine, L., Collins, D. W., & Johnson, W. B. (2002). *Financial Reporting & Analysis*. Prentice Hall.
- Richardson, S. A., Sloan, R. G., Soliman, M. T., & Tuna, I. (2005). Accrual Reliability, Earnings Persistence and Stock Prices. *Journal of Accounting and Economics*, 39, 437–485.
- Robinson, T. R., Henry, E., Pirie, W. L., & Broihahn, M. A. (2012). *International Financial Statement Analysis*. Wiley.
- Rothovius, T. (2008). *Earnings and Analysts' Forecasts*. University of Oulu.
- Rountree, B., Weston, J., & Allayannis, G. (2008). Do Investors Value Smooth Performance? *Journal of Financial Economics*, 90, 237–251.

- Rozenbaum, O. (2014). *EBITDA Disclosure and Overinvestment in Capital*. SSRN Electron. J. <https://ssrn.com/abstract=2543934>
- Saliers, E. A. (1924). *Accountant's Handbook*. The Ronald Press Company.
- Schauten, M. B. J., Stegink, R., & De Graaff, G. (2010). The Discount Rate for Discounted Cash Flow Valuations of Intangible Assets. *Managerial Finance*, 36, 799–811.
- Schilit, H. (2002). *Financial Shenanigans. How to Detect Accounting Gimmicks & Fraud in Financial Reports*. McGraw-Hill.
- Sevin, S., & Schroeder, R. (2005). Earnings Management: Evidence from SFAS No. 142 Reporting. *Managerial Auditing Journal*, 20, 47–54.
- Shah, S. Z. A., Butt, S., & Tariq, Y. B. (2011). Use or Abuse of Creative Accounting Techniques. *International Journal of Trade, Economics and Finance*, 6, 531–536.
- Shumway, T. (2001). Forecasting Bankruptcy More Accurately: A Simple Hazard Model. *Journal of Business*, 74, 101–124.
- Sloan, R. G. (1996). Do Stock Prices Fully Reflect Information in Accruals and Cash Flows About Future Earnings? *Accounting Review*, 71, 289–315.
- Smith, T. (1992). *Accounting for Growth. Stripping the Camouflage from Company Accounts*. Century Business.
- Spathis, C., Doumpos, M., & Zopounidis, C. (2002). Detecting Falsified Financial Statements: A Comparative Study Using Multicriteria Analysis and Multivariate Statistical Techniques. *The European Accounting Review*, 11, 509–535.
- Standard & Poor's RatingsDirect: Standard & Poor's Encyclopedia of Analytical Adjustments for Corporate Entities. July 9, 2007.
- Steer, T. (2018). *The Signs Were There. The Clues for Investors That a Company Is Heading for a Fall*. Profile Books.
- Stickney, C. P., Brown, P. R., & Wahlen, J. M. (2004). *Financial Reporting and Statement Analysis. A Strategic Perspective*. Thomson South-Western.
- Stlowy, H., & Breton, G. (2004). Accounts Manipulation: A Literature Review and Proposed Conceptual Framework. *Review of Accounting & Finance*, 3, 5–66.
- Stutely, R. (2007). *The Definitive Business Plan. The Fast-Track to Intelligent Business Planning for Executives and Entrepreneurs*. FT Prentice-Hall.
- Subramanyam, K. R., & Wild, J. J. (2009). *Financial Statement Analysis*. McGraw-Hill.
- Suda, I., & Hanaeda, H. (2008). Nihon kigyo no zaimu hokoku: Survey tyosa ni yoru bunseki (Corporate Financial Reporting Strategy: Survey Evidence from Japanese Firms). *Securities Analysts Journal*, 46, 51–69.
- Suer, A. Z. (2014). The Recognition of Provisions: Evidence from BIST100 Non-Financial Companies. *Procedia Economics and Finance*, 9, 391–401.
- Taffler, R. (1984). Empirical Models for the Monitoring of UK Corporations. *Journal of Banking and Finance*, 8, 199–227.
- Tennent, J. (2018). *Guide to Financial Management*. Profile Books.
- Teoh, S. H., Wong, T. J., & Rao, G. (1998). Are Accruals During Initial Public Offerings Opportunity? *Review of Accounting Studies*, 3, 175–208.
- Thomas, J. K., & Zhang, H. (2002). Inventory Changes and Future Returns. *Review of Accounting Studies*, 7, 163–187.
- Trueman, B., & Titman, S. (1988). An Explanation for Accounting Income Smoothing. *Journal of Accounting Research*, 26(Supplement), 127–139.
- Unegbu, A., & Adefila, J. (2013). Efficacy Assessments of Z-Score and Operating Cash Flow Insolvency Predictive Models. *Open Journal of Accounting*, 2, 53–78.
- Vause, B. (2014). *Guide to Analysing Companies*. Profile Books.
- Verninmen, P., Quiry, P., Dallocchio, M., Le Fur, Y., & Salvi, A. (2005). *Corporate Finance Theory and Practice*. Wiley.
- Wallman, S. M. H. (1995). The Future of Accounting and Disclosure in an Evolving World: The Need for Dramatic Change. *Accounting Horizons*, 9, 81–91.
- Wang, Z., & Williams, T. H. (1994). Accounting Income Smoothing and Stockholder Wealth. *Journal of Applied Business Research*, 10, 96–104.

- Ward, T. J., & Foster, B. P. (1997). A Note on Selecting a Response Measure for Financial Distress. *Journal of Business, Finance and Accounting*, 24, 869–879.
- Weber, D. (2009). Do Analysts and Investors Fully Appreciate the Implications of Book-Tax Differences for Future Earnings? *Contemporary Accounting Research*, 26, 1175–1206.
- Welc, J. (2017a). EBITDA vs. Cash Flows in Bankruptcy Prediction on the Polish Capital Market. *European Financial and Accounting Journal*, 12, 91–103.
- Welc, J. (2017b). Impact of Non-Controlling Interests on Reliability of Consolidated Income Statement and Consolidated Balance Sheet. *American Journal of Business, Economics and Management*, 5, 51–57.
- Welc, J. (2020). *Reading Between the Lines of Corporate Financial Reports. In Search of Financial Misstatements*. Palgrave Macmillan.
- Wells, J. T. (2005). *Principles of Fraud Examination*. Wiley.
- Whelan, C. (2004, May). *The Impact of Earnings Management on the Value-Relevance of Earnings and Book Value: A Comparison of Short-term and Long-Term Discretionary Accruals*. A Dissertation Submitted to the Faculty of Business in Candidacy for the Degree of Doctor of Philosophy. Bond University.
- Wheelen, T. L., & Hunger, J. D. (1995). *Strategic Management and Business Policy*. Addison Wesley.
- White, C. (2004). *Strategic Management*. Palgrave Macmillan.
- White, G. I., Sondhi, A. C., & Fried, D. (2003). *The Analysis and Use of Financial Statements*. Wiley.
- Wright, G. B., & Cullinan, C. P. (2017). Sino-Forest Corporation: The Case of the Standing Timber. *Global Perspectives on Accounting Education*, 14, 10–22.
- Wyatt, A. (2008). What Financial and Non-Financial Information on Intangibles is Value-Relevant? A Review of the Evidence. *Accounting and Business Research*, 38, 217–256.
- Xie, H. (2001). The Mispicing of Abnormal Accruals. *Accounting Review*, 76, 357–373.
- Zack, G. M. (2003). *Fair Value Accounting Fraud. New Global Risks & Detection Techniques*. Wiley.
- Zhang, I., & Zhang, Y. (2007). *Accounting Discretion and Purchase Price Allocation After Acquisitions* (HKUST Business School Research Paper No. 07-04). Hong Kong.
- Zhang, W. (2008). *Real Activities Manipulation to Meet Analysts' Cash Flow Forecasts*. SSRN Electron. J. <https://ssrn.com/abstract=1013228>
- Zhang, X. (2018). Do Firms Manage Their Credit Ratings? Evidence from Rating-Based Contracts. *Accounting Horizons*, 32, 163–183.
- Zmijewski, M. E. (1984). Methodological Issues Related to the Estimation of Financial Distress Prediction Models. *Journal of Accounting Research*, 22, 59–82.
- Zweig J. (2001, January). A Matter of Expectations. *Money*, pp. 49–50.

Index

A

- Advance payments, 13, 47–49, 57, 276
- Affiliated company, 3, 4, 11, 103, 104
- After-tax earnings, 14, 126, 135, 215, 227, 231, 234, 239, 301
- Amortization, 7, 24–27, 59, 61, 62, 70, 73, 85–88, 115, 116, 121, 133–137, 140, 146, 148, 152, 153, 155, 157, 162, 164, 168, 176, 181, 185, 186, 188, 202, 204, 215, 216, 218, 221–225, 243, 247, 249, 250, 254, 260, 264, 266, 268, 274, 276, 277, 285, 289, 290, 294, 300, 303, 305, 308
- Assets held for sale, 31, 38–40, 51, 66, 67, 89, 218
- Assets turnover, 151, 152, 154, 156, 183, 191, 195–200, 263
- Associated company, 3, 282
- Auditor, 26, 124, 126

B

- Balance sheet, 1–4, 19, 20, 22, 24–26, 29, 30, 32, 33, 38, 39, 41, 43–45, 47–50, 53–58, 66–70, 72, 77, 85, 86, 88, 89, 91–94, 96, 97, 100–102, 105–108, 113, 125, 126, 130, 133, 140, 141, 144, 147, 148, 151–154, 157, 159, 171, 172, 175, 182, 183, 186, 188, 191, 193, 195, 199, 203, 204, 206, 207, 215–218, 220–222, 228, 230–240, 242, 244, 246, 248–255, 258, 259, 261, 262, 264, 265, 276, 277, 283, 284, 286–289, 291, 292, 294, 298, 299, 306, 307

BMW, 108, 114–116, 118, 119, 121–123, 139, 143, 150, 159, 166, 169, 176–179, 192

Book-tax differences, 12–14, 28, 45, 283, 302
Borrowing costs, 21, 116, 119, 120, 123, 234, 235, 241, 248, 297

Borrowings, 42, 49, 58, 65, 69, 73, 105, 147, 160, 163–165, 217, 218, 220, 221, 229, 230, 233–235, 237–242, 244–250, 253, 254, 261–265, 269, 281, 289, 291, 293, 297, 299, 303, 307, 308

Brand, 13, 23, 24, 26, 56, 88, 89, 112, 194

British Airways, 192, 257

Business combinations, 24–27, 57, 63, 85, 86, 88, 109, 112

C

Carrying amount, 8, 9, 21–23, 26–28, 30, 32–34, 36–38, 40, 44–46, 48–50, 53, 54, 56, 59, 60, 66, 67, 85–107, 110, 112, 113, 126, 128–130, 143, 147, 151–153, 169, 177, 193, 195, 199, 215, 218, 220–225, 227, 230, 231, 234, 237, 239, 243, 262, 263, 276–278, 281, 284, 286–291, 297, 300

Cash and cash equivalents, 31, 38–40, 57, 66–68, 72, 74, 175, 184, 218, 229, 251, 252, 254–256, 261, 281, 288, 292, 306, 308

Cash flows, 3, 4, 9, 35, 41, 42, 57–60, 62, 65–67, 71, 74, 109, 111, 126, 136, 144, 145, 159–166, 168–170, 172–174, 176, 177, 180, 213,

- 249–251, 255, 256, 264, 265, 302, 308
- Cash-flow statement, 1, 2, 4, 57–59, 61, 63, 65–68, 131, 136, 137, 140, 148, 176, 185, 216, 222, 248, 249, 254, 255, 258, 264, 265, 289, 302, 303, 308
- Comprehensive income, 16–18, 53
- Consolidated financial statements, 2–4, 68, 95, 99, 108–113, 124–126, 278, 281, 282
- Consolidation, 4, 14, 15, 55, 109, 110, 159
- Contingent liabilities, 41, 46, 47, 49, 50, 77, 107, 108, 147
- Control, 2–4, 6, 11, 15, 16, 20, 25–28, 55, 57, 62, 67, 83, 86, 109–111, 137, 205, 208, 209, 259
- Core business, 7–10, 27, 30, 34, 35, 40–42, 56, 62–64, 89, 92, 94, 95, 126, 134, 135, 138–140, 154, 160, 162, 165, 166, 171, 208, 262, 269, 298
- Cost of sales, 5, 6, 8, 22, 32, 57, 153, 155, 157, 185, 216, 218, 221, 223, 226
- Costs of goods sold, 5, 6, 122, 133, 152, 153, 195, 215, 263
- Credit rating, 181, 182, 187, 189, 190, 235, 247, 264
- Credit risk, 79–81, 93, 97, 98, 100, 128, 132, 136, 144, 159, 180, 182, 183, 186, 190, 241, 245, 247, 265, 266, 269, 295, 298
- Current assets, 20, 21, 26, 30, 31, 37–40, 54, 59–61, 69, 72, 145, 147, 148, 181, 183, 184, 186, 204, 205, 217, 218, 221, 222, 228, 231, 233, 234, 236, 238, 240, 242, 244, 246, 250, 252, 254, 261, 262, 266, 268, 292, 298, 306, 308
- Current income tax, 12, 14, 138
- Current liquidity, 146, 148, 194, 204, 205, 208, 262
- Customer relationships, 24, 26, 112
- D**
- Daimler, 114–116, 118, 119, 121–123, 136, 139, 143, 150, 159, 166, 169, 176–179, 192
- Debt-coverage ratio, 144–147, 149, 150, 167, 169, 182
- Deferred income tax, 12, 14, 135, 249, 252
- Deferred revenues, 41, 47–49, 51, 59, 61, 102, 103, 153, 164
- Deferred tax assets, 21, 28, 29, 31, 130, 135, 152, 157, 221, 227, 283, 306
- Delta Airlines, 257
- Depreciation, 6, 7, 13, 21–24, 33, 38, 40, 57, 59, 61, 70, 73, 89–92, 113, 117–122, 125, 128, 130, 133–137, 140, 146, 148, 152, 153, 157, 162, 164, 168, 176, 181, 185, 186, 188, 191, 202, 204, 215, 216, 221–225, 243, 247, 249, 250, 254, 260, 264, 266, 268, 274, 276, 277, 279, 281, 285, 289, 290, 294, 300, 303, 305, 308
- Development costs, 23–25, 61, 62, 64, 86–88, 115–118, 136, 137, 148, 157, 176, 185
- Dividend, 1, 11, 12, 15, 52, 53, 58, 59, 63, 65, 66, 71, 74, 153, 160–162, 172, 214–216, 222–225, 227, 229, 230, 245, 249, 250, 253, 254, 265, 289
- DuPont analysis, 141, 197–199, 201, 206
- E**
- EBITDA, 133–140, 146–150, 167–169, 171, 173, 176, 182, 188, 190–193, 204, 207–209, 243, 246, 247, 258, 259, 263–265, 268, 269
- EBITDA-to-debt, 247, 248
- EBITDA-to-liabilities, 205, 208, 245, 246, 263
- Enterprise value, 171–173, 175, 176
- Enterprise value to EBIT, 171
- Enterprise value to EBITDA, 171
- Enterprise value to sales, 171
- Equity-accounted investments, 5, 11, 18, 29, 31, 59–61, 156, 157, 217, 218, 281
- Equity method, 4, 27, 28, 60, 111, 159
- EV/EBIT, 171, 176
- EV/EBITDA, 171, 173, 176
- EV/OCF, 171, 172, 176
- EV/S, 171, 172, 176
- Excess of funds, 214, 230, 234, 252–254, 281, 288, 289
- F**
- Fair value, 4, 13, 17, 18, 23, 25–28, 31, 34, 36, 38, 49, 53, 54, 84, 93, 94, 104, 110–113, 118, 131, 170, 178, 179, 278, 279, 288, 296, 308
- Fiat, 105, 114, 115, 117, 119, 121–123, 139, 143, 150, 159, 166, 169
- Financial expenses, 5, 84, 200, 234, 237

- Financial income, 5, 12, 14, 36, 37, 84, 134, 138, 215, 231, 232, 234, 248, 260, 261, 281, 285, 301, 302, 305
Financial instruments, 3, 4, 35, 39, 63, 84, 97, 104, 261, 278, 279, 286, 288, 292, 298, 306, 307
Financial leverage, 143, 144, 146, 194, 197–200, 206, 209
Financial liabilities, 41, 50, 51, 61, 65, 66, 101–104, 153, 160, 164, 175, 217, 218, 221, 222, 229, 233–235, 237–245, 247, 251, 253
Financial risk ratios, 131, 143–148, 150, 204–206, 208
Financial statement analysis, 2, 4, 14, 16, 17, 26, 28–30, 35, 38, 41, 42, 44, 47, 49, 50, 53, 57, 58, 78, 79, 82, 86, 93, 95, 107, 115, 131, 132, 143, 147, 159, 166–168, 175, 179, 190, 201, 203, 213, 214, 216, 230, 247, 250, 257, 268
Financing activities, 58–60, 65–67, 308
Financing cash flows, 58, 60, 65, 66, 70, 71, 74, 160–166, 248–250, 255, 256, 264, 265, 269, 291, 303
Finished goods, 20, 32, 33, 100, 101, 123, 129, 147, 154, 158
Fixed assets, 7, 9, 20, 21, 23, 26, 30, 38, 44, 45, 48, 59, 60, 62, 64, 70, 74, 89, 91, 118, 147, 152, 156, 160–165, 169, 191, 202, 203, 222, 223, 262, 264, 276, 284, 303
Footnotes, 2
Ford, 114, 117–119, 121, 122, 124, 139, 143, 150, 159, 163, 166, 169
Forward multiple, 173
Full consolidation, 4, 55
Funding excess, 215, 218
Funding gap, 160, 165, 214, 215, 227, 229, 230, 232, 234, 237–240, 242, 244–250, 253–255, 281, 288, 289, 291, 294–299, 302–304
- G**
General and administrative expenses, 5–7, 68, 71, 152, 215, 251
General Motors, 139, 143, 150, 158, 159, 163, 166, 169
Goodwill, 24–26, 85–88, 112, 217, 218, 220, 225, 228, 236, 238, 240, 242, 244, 248, 276
Gross margin, 6, 129
Gross margin on sales, 133, 137–139, 194–196, 204, 219, 223, 226, 251
Gross profit, 5–7, 48, 68, 71, 127, 133, 136–138, 204, 216, 219, 223, 226, 251
- H**
H&M, 192, 194–197
Historical cost, 4, 13, 23, 24, 27, 28, 33, 36, 49, 89, 90, 92, 93, 100, 101, 110, 113, 153
Honda, 114, 117, 118, 120–122, 124, 139, 143, 150, 159, 166, 168, 169, 192, 199, 200
- I**
IFRS, 3, 7, 13, 16, 17, 23, 24, 26, 34, 36, 38, 42, 43, 53, 54, 63, 65, 88, 90, 91, 93, 107–109, 112–116, 118, 120, 122–124, 147, 191, 202, 283
Impairment, 8–10, 14, 24, 26, 27, 33, 36, 37, 57, 60, 61, 84, 85, 87–89, 91, 97, 98, 100, 101, 116, 119, 129, 134, 135, 159, 201, 300, 301
Income statement, 1–7, 9–19, 24, 25, 28, 32–34, 36, 37, 43, 47, 48, 50, 53–55, 57–59, 68, 71, 78, 81, 84, 85, 87–89, 93, 98, 100, 116, 126, 132, 133, 135, 136, 138–140, 149, 153, 157, 168, 171, 182, 185, 206, 215–217, 219, 220, 222, 224, 226, 230–236, 238, 240, 242, 244, 248, 251, 254, 255, 258–261, 263, 264, 269, 271, 275, 277–286, 291, 300, 302, 305
Income tax, 5, 12–14, 29, 42, 45, 54, 61, 62, 69, 126, 130, 134, 135, 138, 140, 168, 215, 216, 220, 221, 223, 225, 227, 236, 238, 240, 242, 244, 249, 251, 260, 283–285, 301, 302, 305
Indebtedness, 50, 67, 108, 141, 142, 144–150, 180, 182, 190–194, 197–200, 204, 205, 208, 209, 232, 239, 243, 245, 246, 253, 263, 264, 269, 291, 295–299, 304
Inditex, 192, 194–197
Intangible assets, 13, 21, 23–30, 62–64, 85–89, 112, 114–117, 155, 156, 202, 218, 248, 252, 254, 261, 262, 276, 287, 306, 308
Intangibles, 23, 24, 27, 29, 30, 58, 73, 86, 88, 89, 152, 153, 252, 262, 276, 292

Interest cost, 11, 21, 104, 251
 Interest income, 13, 58, 60, 63, 65, 79, 260, 261, 280, 281, 285, 288, 301, 305
 International Financial Reporting Standards, 12, 59
 Intra-group transactions, 3, 4, 15, 55, 109
 Inventories, 6, 7, 9, 14, 20, 31–34, 36, 39, 40, 57–62, 69, 70, 72, 73, 100–102, 112–114, 122–125, 128, 129, 140, 144, 146, 148, 151–154, 158, 161, 162, 164, 167, 169, 195, 196, 201, 203, 217, 218, 221, 227, 228, 249, 252, 262–264, 287–289, 298, 308
 Inventory turnover, 151, 153, 154, 195–197, 202, 221
 Investing activities, 58, 60, 62, 64, 67, 308
 Investing cash flows, 60, 62–65, 70, 74, 160–166, 248, 249, 255, 256, 264, 265, 303
 Investment properties, 27–29, 31, 61–64, 82, 89, 91–93, 113, 136, 137, 148, 152, 156, 157, 176, 185, 218

J

Joint venture, 11, 60, 103, 104, 110, 111, 157

K

KLM-AirFrance, 192, 257

L

Liabilities, 1–4, 19, 20, 25, 26, 40–56, 59–61, 65, 69, 70, 72, 73, 101–109, 112–114, 126, 130, 144–151, 153–155, 157, 158, 166–169, 171, 181, 183, 184, 186, 188, 190, 197, 198, 202, 204–206, 208, 209, 215, 217, 218, 221, 227–234, 237, 239, 241, 243, 245–247, 252–254, 261, 262, 264, 266, 268, 269, 278, 289, 291, 293, 295–299, 302, 303, 307, 308

Liquidity, 9, 28, 35, 36, 40, 42, 44, 49, 93, 96, 135, 144–150, 154, 155, 165–167, 180, 191–194, 205, 206, 208, 214, 230–232, 243, 264, 269, 304

Liquidity ratio, 144–146, 148–150, 194, 202, 204, 205, 208, 209, 262

Long-term assets, 20, 107, 152, 218

Lufthansa, 192, 257

M

Manipulations, 14, 25, 27, 34, 36, 49, 54, 87, 88, 110, 116, 155, 167, 168, 203
 Manufacturing costs, 33, 116, 119, 123, 137, 251, 252
 Market value, 8, 13, 22, 26, 27, 36, 37, 170, 171, 173–177, 179, 181–183, 207, 209, 229, 266, 267, 296
 Minority interests, 5, 16, 18, 54, 56, 57, 66, 112, 113
 Moody's, 189

N

Net assets, 4, 25–27, 52, 55, 56, 77, 110, 111, 114, 133, 140, 170–172, 174–177
 Net debt, 170, 171, 175, 183–185, 264, 266, 267
 Net earnings, 5, 6, 11, 14–17, 55, 59, 133–135, 138, 139, 141–143, 171, 173, 175, 187, 188, 198–200, 204, 206, 222, 259, 260, 268, 283, 289
 Net margin on sales, 133, 134, 136–139
 Net realizable value, 33, 123, 124, 128
 Net sales, 5, 6, 36, 133, 137, 198
 Non-controlling interests, 6, 16, 25, 54–56, 62, 109, 170, 171, 175, 203, 307

Noncurrent assets, 20, 27, 29–31, 38, 40, 53, 58, 60, 61, 64, 69, 134, 135, 138, 156, 191, 217, 218, 220, 221, 224, 225, 227, 228, 231, 233, 236, 238, 240, 242, 244, 250, 261, 262, 265, 268, 269, 276, 286, 287, 292, 298
 Non-operating receivables, 35, 153
 Norwegian Air Shuttle, 214, 257–278, 280–287, 290–308

Notes to the financial statements, 1, 2

O

Off-balance sheet liabilities, 41–44, 50, 107, 108, 126
 One-off item, 5, 85, 251, 300
 Operating activities, 35, 38, 42, 58–61, 63, 67, 134, 176, 278, 308
 Operating cash flows, 35, 42, 58–63, 65, 70, 73, 74, 134–136, 145, 146, 149, 160–172, 248–250, 254–257, 264, 265, 268, 291, 294, 302, 303
 Operating cycle, 20, 21, 31, 34, 151
 Operating profit, 5, 9, 10, 12, 15, 16, 22, 68, 69, 71, 72, 81–84, 133, 135, 137–139, 142, 148, 149, 167, 168, 170, 171, 174, 176, 182–185, 188,

- 195, 196, 204, 206, 216, 226, 233, 235, 236, 238, 240, 242–244, 247, 249–251, 253, 266, 267, 301, 305
- Operating profitability, 133, 134, 137–140, 191, 195, 196, 204, 206–209, 243, 246, 263
- Operating receivables, 34, 35, 59, 60, 64, 153, 158, 159
- Operating results, 5, 6, 8–10, 12, 81, 83, 258, 300
- Other operating expenses, 5, 7–10, 12, 28, 34, 57, 81–84, 98, 100, 133, 134, 138, 139, 174, 217, 260, 275, 300, 305
- Other operating income, 5, 7–10, 28, 36, 81–84, 98, 133, 134, 138, 139, 156, 174, 216, 217, 220, 226
- P**
- P/BV, 170–172, 175–179, 206, 207, 209
- P/E, 170, 171, 173, 175–177, 206, 207, 209
- P/EBIT, 170, 171, 176
- P/EBITDA, 170, 171, 176, 177
- P/OCF, 170–172, 176, 177
- P/S, 170–172, 175–179
- Paid-in capital, 52, 56, 172, 229, 232
- Parent company, 2–4, 6, 14–16, 52, 54–56, 109, 110, 120, 165, 189
- Payables, 41, 42, 44–47, 49, 51, 58, 59, 61, 65, 70, 73, 101, 102, 105, 144, 145, 151–159, 161, 164, 169, 215, 217, 221, 223, 227, 228, 237, 239, 241, 243, 245, 247, 249, 252–254, 261–265, 268, 289–291, 293, 294, 297, 302, 303, 307, 308
- Payables turnover, 151–159, 221, 263
- PHP model, 187, 188, 265
- Prada, 192, 194–196
- Preference shares, 3
- Prepaid expenses, 21, 28, 29, 31, 37–39, 59, 60, 146, 148, 152, 161, 181, 186, 268
- Prepayment, 32, 33, 90, 100, 102, 252, 261, 262, 264, 276, 284, 286, 292, 306, 308
- Pre-tax earnings, 5, 12, 14, 59, 72, 85, 133, 135, 138, 227, 251
- Price to book value, 170, 171, 206
- Price to EBIT, 170
- Price to EBITDA, 170
- Price to net earnings, 170, 171
- Price to operating cash flows, 170
- Price to sales, 170
- Profitability ratios, 131–133, 135, 140, 143, 146, 204, 207
- Profit before tax, 5, 11, 12, 14, 61, 84, 137, 138, 186, 216, 220, 221, 223, 225–227, 236, 238, 240, 242, 244, 260, 261, 264, 266, 268, 283–285, 294, 301, 303, 305, 308
- Profit on sales, 5–7, 10, 68, 71, 133, 136, 139, 174, 204, 216, 226
- Property, plant and equipment, 7, 8, 13, 21, 23, 29, 53, 57, 62, 64, 72, 89, 90, 112–114, 118–122, 125, 126, 128, 130, 152, 153, 155, 156, 218, 229, 252, 254, 261, 262, 276, 277, 284, 286, 292
- Provisions, 8, 9, 19, 41, 44–47, 49–52, 54, 59–61, 81–84, 106, 107, 112, 125, 129, 130, 134, 138, 146, 157, 162, 166, 198, 202, 307
- PSA Peugeot Citroen, 139, 143, 150, 159, 166, 169, 192
- Q**
- Quick liquidity, 146, 204, 205, 208, 262
- R**
- R&D, 24, 25, 27, 68, 71, 88, 115, 133, 152, 162, 251
- Ratio analysis, 131, 196, 197
- Raw materials, 6–8, 20, 32, 33, 35, 41, 100–102, 123, 129, 147, 154, 158, 213
- Receivable accounts, 7, 9, 21, 30, 31, 34–37, 41, 42, 59, 60, 69, 72, 93–97, 99, 100, 125, 126, 128, 144, 152–155, 157–159, 169, 202, 215, 220, 229, 230, 252, 262, 286–288, 291, 298
- Receivables turnover, 151, 153, 154, 157, 159, 202, 220, 221, 263
- Renault, 114, 115, 117, 118, 120, 122, 124, 139, 143, 150, 159, 161, 166, 169
- Residual value, 21–23, 91, 92, 119, 120
- Retained earnings, 1, 52, 53, 56, 57, 69, 72, 182–185, 266, 267, 307
- Return on assets, 140–143, 187, 195–197, 204, 207, 262, 263
- Return on equity, 140–143, 197–201, 204, 206, 207, 209, 243, 245, 246, 262, 263, 268
- Revaluation, 1, 17, 23, 27, 28, 33, 34, 36, 37, 49, 52–54, 59, 90, 93, 100, 113, 118, 264, 294, 303

- Revenue, 5, 6, 47, 48, 57, 68, 71, 78, 106, 126, 129, 137, 152, 153, 155–157, 172, 176, 216, 218, 220, 226, 258, 260, 269–272, 275, 282, 285, 300, 305
- Revenue recognition, 37, 47, 125
- S**
- Selling expenses, 6, 7, 133
- Separate financial statements, 3, 4
- Shareholders' equity, 1, 2, 11, 15, 19, 20, 41, 51–56, 65, 113, 131, 132, 140–143, 146, 170, 172, 174, 175, 178–180, 184, 197–199, 215, 232, 233, 239, 266, 288, 307
- Short-term assets, 20, 140, 144
- Significant influence, 3, 4, 11, 28, 110
- Stand-alone financial statements, 110
- Standard & Poor's, 181, 189, 190, 247
- Statement of changes in shareholders' equity, 1
- Statement of financial position, 19
- Statement of operations, 5
- Statement of profit or loss, 5
- Subscribed capital, 52, 56
- Subsidiary, 2–4, 15, 55, 67, 113, 120, 124
- T**
- Taffler model, 265
- Takeover, 24, 57, 63, 80, 86, 88, 111, 178
- Tangible assets, 26, 122, 262, 269, 303, 304, 308
- Taxable income, 12–14, 29, 135
- Toyota, 114, 118, 120, 122, 124, 139, 143, 150, 159, 166, 168, 169, 190, 192, 199, 200
- Trade receivables, 9, 30, 34–36, 39, 40, 42, 93–96, 98, 99, 129, 155–157, 169, 218
- Trailing multiple, 172
- Turnover ratios, 131, 151–159, 191, 196, 197, 205, 208, 220, 221, 225, 228, 263, 264, 284, 287–290
- U**
- Useful lives, 13, 23–25, 27, 88, 91, 92, 118–122, 128, 135, 202, 203, 276
- U.S. GAAP, 24, 26, 42, 43, 107, 108, 114, 115, 118, 122, 123, 147, 191
- V**
- Valuation multiples, 131, 170, 172–179, 206, 207, 209
- Volkswagen, 5–8, 10–12, 14, 16–18, 20, 24, 29, 31, 38–40, 50, 51, 56–58, 61–67, 77–108, 110–116, 118–120, 122, 123, 133, 136, 137, 139–143, 145, 148–150, 155, 156, 158, 159, 166–168, 175–179, 182–190, 199–201, 214–219, 222–233, 235, 236, 238, 240–250
- Volkswagen Group, 183, 190
- Voting rights, 3, 109–111
- W**
- Work-in-progress, 20, 32, 33, 100–102, 123, 154
- Write-down, 7–10, 14, 34, 36, 37, 60, 98, 100, 101, 119, 129, 134, 159, 201, 203, 300
- Z**
- Z-score, 180, 181, 183–186, 188, 189, 265–268