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Venture Capital Investors, Capital Markets, Valuation and Information: US, Europe and Asia

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Abstract. This paper uses a large multi-country sample of venture capital firms to compare the approaches to investee valuation and sources of information used by venture capital investors in English, French and German legal systems as well as geographical regions. Different legal systems are significantly associated with the valuation mechanism used. In particular, compared to English-based Common Law systems, VC firms operating in a Germanic legal system are significantly more likely to use DCF based measures and significantly less likely to use PE comparators. This latter result is also the case for VC firms operating in a French legal system who are also significantly more likely to adopt historic cost valuation methods. VC firms in Europe and Asia are significantly less likely than US VC firms to make use of liquidation value methods but significantly more likely to use PE comparators. European firms are significantly less likely to adopt DCF methods compared to US VC firms. VC firms operating under a Germanic legal system are less likely to utilise information from the financial press but significantly more likely to use interviews with entrepreneurs. VC firms operating under a French legal system are more likely to utilise interviews with company personnel as well as sales and marketing information. VC firms in Europe and Asia are significantly more likely than US VC firms to use financial press. VC firms in Asia are significantly less likely to make use of interviews with entrepreneurs or business plan data. VC firms in Europe are significantly more likely to utilise sales and marketing information.

Keywords: venture capital, valuation, information, Europe, emerging markets

Introduction

International entrepreneurship is receiving growing attention (McDougall and Oviatt, 2000). Much of this work has focused on the behavior of entrepreneurial firms in terms of either their cross-border activities or comparisons between firms in different countries. A key influence on entrepreneurial firm behavior concerns their access to venture finance. To date research into international comparisons of the operation of venture capital firms remains limited (Wright et al., 2002). Early studies examined the general factors influencing the growth of different venture capital (Ooghe et al., 1991; Manigart, 1994) and related management buy-out markets (Wright et al., 1992). Other early studies considered the different broad strategy formulations adopted by venture capital firms in the US and Europe (Roure et al., 1992).

More recently, there is increasing recognition of the impact of differences in institutional, legal and cultural environments on the conduct of financial markets in different countries (La Porta et al., 1997, 1998). These factors may also impact the specific development of venture capital markets (Black and Gilson, 1998; Jeng and Wells, 2000). This raises questions about the need to understand the operation of venture capitalists in different countries. While there may be some degree of commonality of venture capitalists' functions across countries (Sapienza et al., 1996), differences in institutional factors concerning regulation, normative rules of behavior and culture (North, 1990; Scott, 1995) may affect business practices internationally (Bruton et al., 2004).

The increasing international spread of venture capital and private equity as firms seek to invest outside their domestic markets (Allen and Song, 2002) brings these problems into sharp focus. Anecdotal evidence suggests that venture capital firms entering international markets may under-estimate differences both with their home market and between apparently similar countries (see e.g. Wright and Kitamura, 2003 in respect of private equity entrants into the Japanese buyout market). Appreciation of this heterogeneity is important for both researchers and practitioners. Venture capital firms seeking to enter different countries within a particular region may experience problems in generating target returns if they fail to take adequate account of the different modus operandi of individual markets. While there may be differences between countries, these differences may be driven by broader institutional characteristics relating to the state of development of the capital, the underlying legal regime (e.g. English versus French versus Germanic origin legal regimes) or broader geographic factors (e.g. Europe; Asia) (Bruton et al., 2004). Ultimately, these factors may influence the financing of the global development of entrepreneurship.

Key issues for venture capital firms' returns concern the methods used to value investments and the information used to arrive at valuations. Valuations are particularly subjective in venture capital investments where the business typically has less of a track record than an established publicly listed company. The valuation placed on a business at the time of investment can have a dramatic effect on the ability of the venture capital firm to meet its target rate of return. These issues are crucial in domestic markets but may assume greater significance in different capital market environments where the level and nature of information may be at some variance to the domestic market. There is little research comparing venture capitalists' approaches to valuation and sources of information in different institutional environments.

This paper provides an initial exploratory attempt to address gaps in previous research by examining the role of the capital market, valuation methods and information sources used in the process of deciding to make a venture capital investment in differing institutional environments and venture capital market contexts. Specifically we address two research questions. RQ1: To what extent do valuation methods vary across institutional environments? RQ2: To what extent do information sources vary across institutional environments?

In addressing these questions, our focus is on the overall behavior of venture capital firms operating within particular markets. We present evidence based on surveys conducted in nine different countries. These countries cover a range of different legal systems. We include countries from the English law based contexts that include long-established venture capital markets (the US and UK), more recently developed venture capital markets (Hong Kong and Singapore) and a developing venture capital market (India). Also we include a Germanic law (bank) based environment with a developing venture capital market (Germany), a French law-based (network) environment (France, Netherlands and Belgium). We examine differences between these institutional and geographical contexts since we anticipate that influences in behavior will relate to the structural differences between these contexts.

The paper begins by outlining how venture capital markets differ in relation to their structural and institutional differences. Next, we develop the argument that a venture capital firm's behavior, in relation to valuation methods and sources of information used, will vary according to its institutional environment. The third section provides an outline of the representative surveys of venture capital firms in the nine countries in the study. This is followed by an analysis of the findings. In the final section, some conclusions are drawn and implications for researchers and practitioners discussed.

Structural and institutional differences

In this section we argue that venture capital markets throughout the world are heterogeneous in terms of their structure and the different institutions upon which they are based. In particular, there are structural differences in terms of their stage of development and allocation of funds across different investment stages. However, we argue that it is the institutions that underpin these markets that have a greater influence on the behavior of venture capital firms. We expand below.

Structural differences

There are notable differences between the venture capital markets examined here, particularly with respect to their level of development and the relative importance of different investment stages. Table 1 shows some important characteristics of the venture capital industries in each of the countries studied here. The data in the table refer to the total investment by VC firms based in each country. The US market is by far the largest market, followed by the UK, France and Germany. Hong Kong is of a similar size to the combined Dutch and Belgian markets. The Indian market is the smallest.

Table 1. Venture capital in the study countries ($m).

	US	UK	Hong Kong	Singapore	India	Germany	France	Netherlands	Belgium
Investments ($m)									
1999	54,994	11,367	1,735	1,060	384	3,400	3,034	1,841	725
2000	106,391	12,048	2,426	1,281	830	5,133	5,711	2,063	608
Portfolio ($m)									
1999	134,500	27,720	7,187	2,830	802	8,500	12,496	4,921	1,933
2000		35,840	8,919	3,627	1,550	12,359	17,073	6,416	2,326
CAGR 1993–2000 (%)	29		24	27	47	20	20	22	15
VC/GDP in 2000 (%)	1.07	0.86	1.48	1.39	0.17	0.23	0.38	0.48	0.23
CAGR VC/GDP 1993–2000 (%)	24		20	18	38	17	17	18	11
Stage (2000)									
Seed/start-up	22	12	26	30	49	35	22	19	47
Expansion	58	34	35	44	42	45	36	55	46
Buy-out	18	53	30	12	4	18	38	19	6
Other late		1	9	14	5	2	4	7	1

*US stage figures relate to 2001.

At the beginning of the 1990s, the US market was highly developed. In Europe, the UK, Dutch, Belgian and French markets were more established at the beginning of the 1990s while the German market was less developed and remained so at the end of the decade. The venture capital markets in Hong Kong, and Singapore emerged only from the 1980s, with that in India being more recent still (Verma, 1997). The three Asian markets displayed somewhat faster growth rates than in the European countries. However, there are notable differences within regions, especially with respect to the greater growth of the Indian market in Asia. These figures are consistent with Allen and Song's (2002) findings that venture capital in both Europe and Asia grew rapidly in the 1990s.

The markets also vary considerably in relation to countries' GDP in 2000. The annual investments made by venture capital firms in the US in 2000 was 1.07% but this is exceeded by Hong Kong and Singapore with 1.48 and 1.39%, respectively. The European venture capital markets amount to considerably smaller shares of GDP, especially in Germany at 0.23%. These differences between the European countries and US, UK, Hong Kong and Singapore is in line with expectations given the reduced emphasis on capital markets in the former (La Porta et al., 1997; Black and Gilson, 1998). The much newer Indian venture capital market amounts to only 0.17% of GDP.

Early and expansion stage investments dominate the US market in terms of amounts invested (Table 1). Allen and Song (2002) in comparing Asian and European venture capital markets find that in Asia there was more investment in early stage projects while in Europe there was more investment in late stage projects. However, there are notable variations between countries even within these regions. As Table 1 indicates, in Europe early and expansion stage investments are important in Germany and Belgium. The UK and French market have stronger emphases on buyout stage investments than the other countries. Among the three Asian countries examined here, Hong Kong also reports a relatively high share for buyout stage investments while India has the highest early stage share. Expansion-stage investments constitute the most popular area of investment in Hong Kong and Singapore.

Institutional differences

Venture capitalists' valuation approaches, and the information they use in making such valuations, may be influenced by their institutional environments. Institutional theory identifies the effects of norms, culture and regulations on behavior (Scott, 1995). The existence of behavioral norms would suggest a certain degree of commonality of behavior by venture capital firms between countries, while cultural and regulatory differences would suggest differences between countries. One of the key aspects of different regulatory environments is the framework influencing the regulation of financial reporting. Differences in such frameworks have been identified as important in differentiating between markets (Wright et al., 1992). In this paper we focus on a country's legal system as an important influence on the behavior of firms in a country's venture capital market (Jeng and Wells, 2000; Bruton et al., 2004).

A key difference between different venture capital environments has been the legal system of the country (Allen and Song, 2002). The major legal systems of the world are derived from either English law, French Law or German law (LaPorta, 1997). La Porta et al. (1997) show that the legal protection for minority shareholders matters for the size and extent of the country's capital markets. This finding is explained by the fact that a good legal environment protects potential financiers' interests and hence increases their willingness to provide funds in exchange for equity. English-based common-law countries have the strongest legal protection of shareholders, while investor protection is weaker in German civil-law countries, and still weaker in French civil-law countries.

The US, UK, Hong Kong, India and Singapore have been categorised as having the same English-based common law legal origin (La Porta et al., 1997). However, even within English-based systems there is considerable variety of development of stock markets, the US having greater ratios of external capital/GNP, IPOs/population, listed companies/population than is the case in India, with the corresponding figures for UK, Hong Kong and Singapore being even higher (La Porta et al., 1997, 1998). Black and Gilson (1998) argue that a well-developed stock market, providing exit routes, is critical to the existence of a vibrant venture capital market. Jeng and Wells (2000) note that the level of IPOs is especially important for later stage but not early stage venture capital. In the US, the developed nature of the main stock market and the introduction of NASDAQ with less stringent requirements provide opportunities for the realization of venture capital investments. Further, a developed takeover market provides further venture capital realization options. In contrast, the Indian stock market is relatively underdeveloped with little scope for expansion in a regime dominated by state-directed credit.

Black and Gilson (1998) also note that stock markets elsewhere in Europe outside the UK are under-developed as are venture capital markets. With respect to the European markets, studied here, all except the Netherlands have lower external capital/GDP ratios than any of the English-common law-based markets. Secondary tier stock markets have been introduced such as the Second Marche in France the Neuer Markt in Germany but with limited success.

Bruton et al. (2004) argue that the nature of a country's legal environment and, related to this, the development of its capital markets, not only influences the development of its venture capital industry, but also the behavior of its VC firms. Apart from the existence of laws, the enforcement of those laws is an important issue for financial investors. Local cultures affect how different regulations are implemented (Kostova, 1997). Legal enforcement is probably highest in the US, intermediary in Europe and erratic to non-existent in certain parts of Asia (Bruton et al., 2003). It is expected that law enforcement will impact the way VC firms behave.

Besides regulatory institutions, particular countries may be characterised by different cognitive or cultural institutions (Scott, 1995) that may affect how VC firms behave. For example, the strength and importance of social and business networks may impact the VC deal selection process (Bruton et al., 2004). Hence, we might expect that countries with different legal systems are not necessarily homogeneous across geographical contexts.

In the following sections we develop propositions relating to the behavior of venture capital firms across different institutional environments in terms of their valuation methods and sources of information used in valuation.

Valuation and information in venture capital investment

Valuation approaches

A number of approaches to the valuation of enterprises are available. The limitations of using balance sheet based asset measures, especially historic cost asset values, to value enterprises are well-recognised in standard finance texts. However, in the absence of strong capital markets, historic cost measures may be viewed as more tangible valuation measures. Shareholder protection is lower in French and German legal systems (La Porta et al., 1998, 2000), making assets-in-place somewhat more important than in English legal systems as a form of protection for investors. Further, Sapienza et al. (1996) also note that executives in Continental European venture capital firms are more financially oriented than US venture capital firm managers. In bank-based systems, many VC firms may be owned by banks, with VC executives having a background in banking (Ooghe et al., 1991). Given the importance of collateral in bank lending, such executives may be more likely to pay attention to the asset backing of investees. Hence:

> *P1a:* Asset based valuation methods are likely to be significantly more important in countries with French and German legal systems than countries with an English legal system.

Where there is a high risk of failure, the expected liquidation value of assets may be an important consideration in valuing potential investees. These valuations may be more feasible in market-based systems, which tend to be associated with active takeover markets, especially for forced asset disposals (Shleifer and Vishny, 1992). The US has notably the most developed acquisitions market among the countries studied here while this is less true of Europe and Asia. Hence, although relatively little importance is expected to be placed on asset based valuation methods in general:

> *P1b:* Liquidation value asset based methods are likely to be significantly less important in countries in Europe and Asia than in the US.

Theoretically, discounted cash flow (DCF) valuation methods are superior to asset-based approaches. However, countries with less developed capital markets are less likely to utilise valuation techniques consistent with standard corporate finance theory (e.g. DCF, dividend yield) developed in an advanced capital market context. Hence, we expect that DCF will be less important for VCs in countries with French or German legal systems. Moreover, a lot of VCs are subsidiaries of banks in the bank-centered German financial system. Former bank managers may not be trained to use prospective-looking valuation methods. Further, Hellman et al. (2004) have shown that bank-owned

VC firms pursue other goals than independent VC firms: cross-selling bank products to their portfolio companies seems to be important for them. These features make us expect that prospective-looking DCF methods will be less important for VCs operating in French and German legal systems. Hence:

> *P1c:* DCF based methods are likely to be significantly more important in countries with English legal systems than countries with French and German legal systems.

Capital markets may provide comparator valuations with publicly available information in terms of sector price/earnings ratios. This market-based valuation method is not only relevant for valuation purposes at the time of investment, but it also provides an indication of potential values when going public. P/E and other comparator valuation methods are, however, only relevant when there are enough comparable quoted companies. Given that P/E ratios differ widely across different stock markets, it is important to have access to a wide range of quoted companies on the relevant stock market in order to be able to produce a meaningful P/E ratio. This is only feasible in countries with well-developed stock markets, i.e. in English legal system countries (La Porta et al., 1997, 1998). P/E and other comparator valuation methods are less informative and valuable in countries with few public companies. Hence:

> *P1d:* Price earnings comparator valuation methods are likely to be significantly less important in countries with German and French legal systems than countries with an English legal system.

Sources of information

Unlike publicly listed corporations, venture capital investments are characterised by considerable private information (Wright and Robbie, 1998). The relative importance of information from financial sources versus information from entrepreneurs and information from alternative market sources may vary between countries according to the relative importance of the capital market.

The US has developed a system focused on understanding entrepreneurs and their potential contribution to value creation, which may be especially important given the emphasis in that country on early stage investments. In network-based countries, greater emphasis may be placed on information relating to the entrepreneur than in a market-based system (Manigart et al., 2000; Bruton et al., 2004). Networks between business people are generally seen as stronger in much of Europe compared to the US since the need to be part of a social network is viewed as vital (Wells and Grieco, 1993). Asia is generally recognised as having different cognitive institutions than the United States and Europe (Orru et al., 1997; Peng, 2000). Asian culture also emphasises the importance of networks (Boisot and Child, 1996; Bruton et al., 1999); this may even be much stronger than in Europe (Tsang and Walls, 1998). Claessens et al. (2000) have emphasised the importance of social and particularly family networks in East Asian businesses. Bruton et al. (2002) note that in Singapore, for example, connections and relationships with potential clients are likely to be far more important than in the West. In Singapore, applications from individuals who "walk in the door" are therefore less likely to receive funding than in the West. Network relationships are important for bank lending in Southeast Asian countries in the absence of more reliable alternative mechanisms (Rajan and Zingalis, 1998). As the venture capital industry is less regulated and established than the banking industry in Asia, this suggests that relationships and other similar institutions could be even more important in this sector (Bruton et al., 2002). Allen and Song (2002) note that implicit relationships may provide a good substitute for explicit contracts in environments of relatively low contractual enforcement, which may be more problematical in Asia. While members of a network may obtain reliable information (Fiet, 1995), venture capital firms face the potential problem of being outsiders prior to a relationship being established. A common cultural problem in Hong Kong, for example, is the dominance of boards of directors by extended family members, which inhibits venture funds' access to information and subsequent investment decisions. As such, VC firms in Asia may be expected to place less credence on information about the business supplied by the entrepreneur. Hence:

P2a: Venture capital firms in German and French legal system countries are likely to place significantly more emphasis on information provided by the entrepreneur than are venture capital firms in countries with an English legal system.

P2b: Venture capital firms in Asian countries are likely to place significantly less emphasis on information provided by the entrepreneur than are venture capital firms in the US.

The problems in trusting information provided by entrepreneurs may extend to information in the business plans prepared by entrepreneurs. In the US, for example, there is some evidence that the business plans do provide useful financial information. In the US, VCs have legal rights protecting their investment against agency problems relating to the entrepreneur (Bruton et al., 2000). This may be more problematical in an environment of weak legal systems and weaknesses in the enforcement of legal systems. Owners may be asked to give warranties regarding the veracity of information in countries in Europe and Asia. But it may be naïve simply to rely on warranties in environments where the enforceability of contracts may be difficult and where recourse to the courts may have adverse implications for reputation (Ahlstrom and Bruton, 2004). In China, for example, reporting regulations may not be enforced such that reported fixed assets and accounts receivable may be unreliable (Bruton and Ahlstrom, 2003). Accounting standards in the French and German legal system countries studied here score only slightly less highly than those with an English system except for India (La Porta et al., 1997). In this context of relatively strong financial reporting systems, European venture capital firms are likely to emphasise accounting and financial data equally highly as their US colleagues. Hence:

P2c: Venture capital firms in Asia are likely to place significantly less emphasis on accounting and financial data in the business plan as a source of information than venture capital firms in the US.

Venture capital firms may seek to verify the situation in potential investees by placing greater emphasis on other sources of information in an attempt to obtain independent information (Fried and Hisrich, 1994). Less market oriented systems may also be associated with a lower willingness to disclose non-mandatory information. Hence, the financial press in German and French legal system environments may provide less useful information for venture capital firms. The market risks in India, as measured by the risks associated with undertaking contracts, are markedly higher than in Hong Kong or Singapore which are in turn higher than in the US (La Porta et al., 1998). Therefore, venture capital firms in Asia may rely more on independent verification such as through financial press and trade journals. Hence:

P2d: Venture capital firms in German and French legal system environments are likely to place significantly less emphasis on information from attempts at verification from other sources than are venture capital firms in English legal systems.

P2e: Venture capital firms in Europe and Asia are likely to place significantly more emphasis on information gained from attempts at verification from other sources than are venture capital firms in the US.

Methodology

The questionnaire administered to respondents was developed based on a previous questionnaires used in the UK which had been pre-tested with UK venture capitalists, advisors and academics (Wright and Robbie, 1996). An organization-wide response was sought in all cases, with the covering letter to senior investment managers specifically asking respondents to report institutions' perceptions rather than individual approaches; the UK study had suggested that the issues examined here were in any case generally driven by organization-wide policies.

For the UK, the questionnaires were sent to the full members of the British Venture Capital Association in early 1994. The questionnaires were translated into French and Dutch, in order to be used in France, Belgium and the Netherlands. They were sent to the full members of the 'Association Française des Investisseurs en Capital Risque', the Belgian Venturing Association, the 'Nederlandse Vereniging voor Participatiemaatschapppijen' and to the French, Dutch and Belgian members of the European Venture Capital Association in late 1995—early 1996 and to members of the German BVK in 2001. In total, we received 203 responses, giving a response rate for Europe of 38.7%. The responses from these countries consist of a relatively larger number of independent venture capital firms compared to the VC industry in the respective countries. The stage distribution of the investments in the sample under study is, moreover, more heavily weighted towards acquisition/buy-out investments, compared to population statistics. The fact that the venture capital firms in our sample report less early stage investments than found in the EVCA statistics can be explained by the fact that EVCA statistics report the stage distribution of new investments in 1995, whereas our sample reports the stage distribution of the current investment portfolio. This might thus include investments venture capital firms entered at the early stage of development, but which have matured and are now reported as an expansion/development investment.

The US survey was carried out in late 1996. The US questionnaire was sent to a random sample of 299 US venture capitalists listed in Pratt's Guide to Venture Capital Sources. Follow-up reminders were sent after two months. A total of 73 completed and usable replies were received, representing a response rate of 24%. No significant differences were identified between respondents and non-respondents in terms of type of venture capitalist and amount of capital under management.

Multicountry studies are fraught with potential problems relating to the capture of data from respondents. It is recognised that in some environments, there may be resistance or logistical problems relating to particular approaches. Hence, for example, Hitt et al. (2000) note in their study of foreign partner selection in developed and emerging markets that there was some resistance to mail questionnaires in some of their sample countries and that they therefore used face to face interviews in order to obtain acceptable responses rates. We adopt this approach as we were concerned that in the Asian countries in our study, mail questionnaires could be problematical where there is a strong tradition of business secrecy. In India, Hong Kong and Singapore, therefore, attempts were made to conduct face-to-face or telephone interviews where possible in order to maximise the response rate. Personal interviews were also expected to help with comprehension and in the event respondents had no problems comprehending the questionnaire. The same survey instrument was administered as in the US and European countries.

The India survey was conducted during summer 1999. In Singapore and Hong Kong, the study was conducted in summer 2000. We contacted members of the venture capital associations in each country. We received a total of 81 responses, giving are response rate for Asia of 47.4%.

Ideally, it would be appropriate to collect data simultaneously. However, when the study commenced, several of the markets were quite under-developed and it would not have been possible to conduct surveys there. The different actual real time periods during which data were collected may serve to capture markets at closer points in their development stage. In more developed markets such as the US and UK, methods may be more likely to be stable so it is less important to conduct surveys simultaneously. This issue is more important for developing markets, where we have achieved a closer degree of simultaneity.

Results and analysis

Initial background analysis is provided of the similarities and differences between venture capital firms operating in each of the countries using Kruskal-Wallis tests. As a non-parametric test this is more conservative than parametric tests. The data were demeaned on a firm by firm basis in order to address potential problems arising from systematic differences in the use of scales. Multivariate tests were carried out using OLS regression.

Univariate analysis

Valuation methods (see Table 2): Significant differences were identified between legal systems and geographical areas in respect of several valuation methods. Asset based valuation methods were generally the least important valuation methods. We find significant differences between the legal systems (Panel A) in respect of the use of historic cost book values, with this being relatively important in countries with a French legal system. Elsewhere the scores are generally low in Europe, the US and Asia. The DCF method is significantly more important in Germanic countries, followed by English legal system countries. There is widespread use of comparator rule of thumb approximations, with greatest importance attached to price/earnings multiples in English legal system countries. With respect to geographic region (Panel B), historic cost asset methods are significantly more important in Continental Europe than elsewhere. There was no significant difference between regions in the use of DCF techniques but price-earnings multiples were most important in Asian countries followed by US and UK, ahead of Continental Europe.

Sources of information (see Table 3): Business plan data are rated highly in all markets, but there was no significant difference in the importance of this information source between legal system (Panel A). Significantly more emphasis is placed on information from entrepreneurs in Germanic legal system countries, ahead of France, with English legal systems expressing least importance. The financial press is relatively less important generally, but significantly greater emphasis is placed on it in English legal system countries. With respect to geographic area, significantly less emphasis is placed on information from entrepreneurs in Asia, with greatest importance attached to the entrepreneur in Europe, followed by US and UK. Greatest importance is attached to the information in the business plan in Europe, followed by the US and UK, with Asia having lowest importance. Relatively more importance is attached to information from the financial press in Asia, followed by the US and UK ahead of Europe.

Multivariate analysis

Multivariate analysis was conducted to examine the effects of the state of development of external capital markets, the nature of the legal system and other institutional differences with the US as measured by Europe and Asia dummy variables. Combining individual countries in this manner also reduces potential problems arising from small samples in individual countries. Categorization of countries into different legal systems was based on La Porta et al. (1997, 1998). The regressions also controlled for the

Table 2. Methods used in valuing potential investments.

	Legal system	*N*	Mean	Std. dev.	Chi square
	Panel A: By legal system				
Historic cost book value	English	213	−.9154	.8856	47.88***
	German	47	−.9333	.6781	
	French	70	.2243	1.2005	
	Total	330	−.6762	1.0445	
Liquidation value of asset (forced sale)	English	213	−.9379	.9163	.67
	German	47	−1.0184	.9010	
	French	70	−1.0186	.8254	
	Total	330	−.9665	.8938	
Discounted future cash flow	English	214	.3697	1.0227	19.43***
	German	49	.9721	1.0611	
	French	70	−7.5714E-02	1.3393	
	Total	333	.3647	1.1410	
P/E basis	English	212	.8105	.8265	8.18*
	German	47	.6199	.9283	
	French	70	.4957	.9338	
	Total	329	.7163	.8724	
	Panel B: By geographic region				
	Region	N	Mean	Std. dev.	Chi square
Historic cost book value	US and UK	137	−.9119	.8762	24.28***
	Cont Europe	117	−.2407	1.1681	
	Asia	76	−.9217	.9081	
	Total	330	−.6762	1.0445	
Liquidation value of asset (forced sale)	US and UK	138	−.8430	.9675	3.35
	Cont Europe	117	−1.0185	.8528	
	Asia	75	−1.1127	.7904	
	Total	330	−.9665	.8938	
Discounted future cash flow	US and UK	138	.2874	1.0455	1.42
	Cont Europe	119	.3557	1.3323	
	Asia	76	.5191	.9689	
	Total	333	.3647	1.1410	
P/E basis	US and UK	138	.7729	.8787	9.14**
	Cont Europe	117	.5456	.9296	
	Asia	74	.8804	.7194	
	Total	329	.7163	.8724	

All tests are Kruskal-Wallis tests. Significance levels: $^{***}p < .001$; $^{**}p < .010$; $^{*}p < .050$; $^{\#}p < .100$.
Note: Scale measures what valuation methods are applied ruing the valuation process to value potential investments. Different methods were rated on a scale of: 5 = Almost always, 3 = Sometimes, 1 = Never. Data has then been de-meaned for all venture capital companies—on an individual company basis.

potential effects of investment stage, ownership type of venture capital firm (whether the firm was independent or captive) and years of experience in the venture capital market as these were seen in Table 1 to vary between countries. We also controlled for the state of development of the capital market based on La Porta et al. (1997).

Table 3. Sources of information in preparing valuations.

	Legal system	*N*	Mean	Std. dev.	Chi square
	Panel A : By legal system				
Financial press	English	219	−.7152	1.0824	11.86**
	German	53	−1.0539	.6872	
	French	68	−1.1570	.7691	
	Total	340	−.8564	.9899	
Interviews with entrepreneurs	English	218	.3503	.8750	23.89***
	German	53	.9272	.4688	
	French	70	.5230	.7505	
	Total	341	.4754	.8240	
	Total	341	−1.1419	.8831	
Business plan data	English	207	.5514	.8083	3.40
	German	52	.6731	.6661	
	French	68	.7652	.6183	
	Total	327	.6152	.7541	
	Panel B: By geographic region				
	Region	*N*	Mean	Std. dev.	Chi square
Financial press	US and UK	139	−.8395	1.1844	23.93***
	Cont Europe	121	−1.1119	.7332	
	Asia	80	−.4992	.8415	
	Total	340	−.8564	.9899	
Interviews with entrepreneurs	US and UK	138	.5167	.9273	38.35***
	Cont Europe	123	.6972	.6728	
	Asia	80	6.328E-02	.6929	
	Total	341	.4754	.8240	
Business plan data	US and UK	127	.6935	.8603	18.34***
	Cont Europe	120	.7253	.6384	
	Asia	80	.3258	.6628	
	Total	327	.6152	.7541	

All tests are Kruskal-Wallis tests. Significance levels: $^{***}p < .001$; $^{**}p < .010$; $^{*}p < .050$; $^{\#}p < .100$.
Scale measures the importance of different sources of information in preparing valuations. Different sources of information were rated on a scale of: 5 = Essential, 3 = Moderately important, 1 = Irrelevant. Data has then been de-meaned for all venture capital companies—on an individual company basis.

Valuation Methods (see Table 4): Years of experience in the venture capital industry, ownership type of VC, number of investment executives and whether the firm is involved in MBOs/MBIs generally have no significant impact on the importance placed on particular valuation methods, except for a weakly signficant positive association of the age variable with the PE method. Early stage investments were weakly significantly positively associated with use of liquidation value and weakly significantly associated with use of the DCF valuation method, while early stage investments were significantly negatively associated with historic cost values of assets.

Different legal systems are significantly associated with the valuation mechanism used. VC firms operating in a French legal system are significantly more likely to adopt historic cost valuation methods, thus providing limited support for Proposition P1a.

Table 4. Methods used in valuing potential investments.

	Asset value Beta (S.E.)	Liquidation asset value Beta (S.E.)	DCF Beta (S.E.)	P/E Beta (S.E.)
German legal system	−.052	.318	1.311	−.756
	(.317)	(.283)	(.365)***	(.290)***
French legal system	1.028	.367	.121	−.855
	(.259)***	(.231)	(.300)	(.237)***
Europe	.266	−.686	−.629	.789
	(.216)	(.192)***	(.250)*	(.196)***
Asia	.095	−.724	−.185	.605
	(.210)	(.188)***	(.243)	(.193)**
External capital per GNP	.100	.272	.337	−.395
	(.281)	(.253)	(.326)	(.261)
Early stage	−.066	.202	−.247	−.015
	(.120)	(.106) #	(.139)#	(.109)
MBO/MBI	.002	−.005	.007	.014
	(.010)	(.009)	(.011)	(.009)
Independent	−1.35	.002	.053	.070
	(.118)	(.105)	(.136)	(.107)
Age	.000	−.004	−.005	.010
	(.007)	(.006)	(.008)	(.006)#
Investment executives	−.001	.003	−.002	−.001
	(.000)	(.003)	(.005)	(.004)
Constant	−1.032	−.723	.586	.561
	(.271)***	(.241)**	(.313) #	(.247)*
N	287	287	290	286
R^2	.214	.107	.116	.097
Adj R^2	.185	.075	.084	.064
F Stat	7.535***	3.335***	3.657***	2.963***

Sources of information measured on a 1–5 likert scale. Data has then been de-meaned for all venture capital companies—on an individual company basis.
Legal system dummies coded - 1 = Yes, 0 = No.
Regional dummies coded 1 = Yes, 0 = No.
Stage involvement dummies coded 1 = Involved in stage, 0 Not involved in stage.
Independent dummy coded as 1 = Independent (in some way), 0 = Fully dependent.
Age is the number of years since the start of the firm.
Investment executives is the number of executives employed in a country.
Significance levels: # < .1; * < .05; ** < .01; *** < .001.

VC firms in Europe and Asia are significantly less likely than US VC firms to make use of liquidation value methods, thus providing support for Proposition P1b. Compared to English-based Common Law systems, VC firms operating in Germanic and French legal systems are significantly less likely to use PE comparators (supporting Proposition P1d).

Sources of information (see Table 5): The number of years of experience in the venture capital industry and whether the firm is involved in MBOs/MBIs have no significant impact on the importance placed on particular sources of information. VC firms operating

Table 5. Sources of information.

	Interviews with entrepreneurs Beta (S.E.)	Business plan data Beta (S.E.)	Financial press Beta (S.E.)
German	.779	−.047	−.494
legal system	(.247)**	(.239)	(.291) #
French	.276	.126	−.692
legal system	(.204)	(.197)	(.241)**
Europe	−.241	−.030	.704
	(.175)	(.174)	(.205)***
Asia	−.387	−.452	.574
	(.168)*	(.167)**	(.196)**
External capital	.049	.030	.175
per GNP Early	(.215)	(.208)	(.254)
stage	.003	.043	−.119
	(.098)	(.095)	(.115)
MBO/MBI	.008	.000	−.004
	(.008)	(.008)	(.009)
Independent	.114	−.076	−.144
	(.095)	(.092)	(.112)
Age	.010	.000	.005
	(.005)#	(.005)	(.006)
Investment	−.005	.003	−.002
executives	(.003)	(.003)	(.004)
Constant	.342	.698	−1.240
	(.214)	(.211)***	(.229)***
N	299	290	299
R^2	.150	.071	.145
Adj R^2	.121	.038	.115
F Stat	5.108***	2.153*	4.885***

Sources of information measured on a 1–5 likert scale. Data has then been de-meaned for all venture capital companies.
Legal system dummies coded—1 = Yes, 0 = No.
Regional dummies coded 1 = Yes, 0 = No.
Stage involvement dummies coded 1 = Involved in stage, 0 Not involved in stage.
Independent dummy coded as 1 = Independent (in some way), 0 = Fully dependent.
Age is the number of years since the start of the firm.
Investment executives is the number of executives employed in a country.
Significance levels: # < .1; * < .05; ** < .01; *** < .001.

under a Germanic legal system are significantly more likely to use interviews with entrepreneurs but this is not the case for VC firms operating under a French legal system. There is thus mixed support for Proposition P2a. VC firms in Asia are significantly less likely to make use of interviews with entrepreneurs or business plan data, providing support for Propositions P2b and P2c. VC firms operating in a German or French legal systems are significantly less likely to place emphasis on the financial press. This provides limited support for Proposition P2d. VC firms in Europe and Asia are significantly more likely than US VC firms to use financial press, thus providing some support for Proposition P2e.

Discussion and conclusions

This paper has presented an exploratory analysis of the valuation methods and information sources used by venture capital firms in different institutional environments. The findings presented here add to the limited data on the internationalization activity of venture capitalists. Hall and Tu (2003) suggest that the willingness of venture capital firms to invest overseas is positively related to the size of venture capital firm and the investment stage of their investees and negatively to the age of the venture capital firm and not related to the type of firm ownership. In contrast, our study explores venture capital firm behavior and adds to the emerging debate regarding the influence of different institutional contexts on firm behavior. The findings of the study present novel insights that are pertinent to the growing internationalisation of venture capital. We have identified significant differences in the valuation methods adopted by venture capital firms in countries with different institutional contexts as well as the sources of information they use. The findings are summarised in Table 6. Overall, a key theme is that it appears that the legal system, and its implication for capital markets, may be more important in explaining the source of information used than it is for the valuation methods used.

However, cultural factors are found to play an important role in the relative importance that is placed on information provided by entrepreneurs and in the business plan, and in the extent to which alternative external sources are sought. This suggests that information sources are not so easily passed from one context to another. The actual sources of information that venture capital firms may trust vary both between and within legal systems and geographic regions. These findings indicate that apparently similar systems and markets may in fact be heterogeneous. Further analysis might usefully explore the rationale for such differences. In this paper, partly because of relatively small sample si7s in some countries, we have focused on geographical regions. It might be fruitful for future research to examine individual countries in more depth, although such analysis may need to await the further development of individual capital markets.

Table 6. Summary of hypotheses and results.

Hypothesis	Prediction	Result
	Valuation methods	
P1a (Asset valuation)	French, German > English	Limited support
P1b (Liquidation asset)	Europe, Asia < US	Supported
P1c (DCF)	English > French, German	Not supported
P1d (PE Comparator)	French, German < English	Supported
	Information sources	
P2a. (Entrepreneur)	French, German > English	Mixed support
P2b. (Entrepreneur)	Asia < US	Supported
P2c. (Business plan)	Asia < US	Supported
P2d (Other information—financial press)	French, German < English	Supported
P2e. (Other information—financial press)	Europe, Asia > US	Supported

In relation to the control variables examined in this study, it is interesting that neither the stage focus, nor the affiliation of the venture capitalist (i.e. independent or not) were significantly related to the valuation methods or sources of information used. This is interesting in the light of earlier research from the UK that did identify differences between both information usage as well as valuation method and the affiliation of the venture capital firm (Wright and Robbie, 1996). While venture capitalists may seek to address information and valuation problems by investing in later stage transactions with more established businesses, this does not appear to be the case across different institutional environments. These findings suggest that regulatory and cultural institutional factors may be more important than the focus of investment attention and ownership of the venture capital firm. The state of development of a country's external capital market was also not significantly related to the valuation methods or sources of information used.

Institutional contexts may not necessarily be static, especially in emerging markets (Hoskisson et al., 2000; Peng, 2003). The recent emergence of venture capital and private equity markets in contexts where they have long been dormant is itself a reflection of changing institutional factors (Wright et al., 1992, 2003, 2004). Longitudinal studies would help in identifying the links between institutional developments and changes in venture capital firm behavior. A feature of such developments may be that institutional differences become less important over time and that agency and other factors may become more important. However, differences between institutional environments are likely to persist such that there may be a need to develop research that considers the interaction of institutional and agency perspectives. Hoskisson et al. (2000) speculated in their examination of strategy in emerging markets that institutional factors would become less important over time. It is clear, however, that institutional differences may take longer to reduce than might be anticipated. Moreover, the pace at which institutions change may also be different. There is, therefore, a need for researchers to continue to develop an institutional perspective on the venture capital industry.

This paper has a number of limitations and hence the findings need to be considered tentative. These limitations also suggest areas for further research. First, the surveys were conducted at different points in time. This may lead to potential issues of comparability if institutional environments change over time. However, offsetting this issue the different points of real time do provide for some reduction in the gap between the stage of development of each market. Second, the study has been based on quantitative survey data. More fine-grained analysis concerning the process by which venture capital firms search for information and undertake valuation might usefully be undertaken with the use of detailed case study approaches. Third, the study has relied on attitudinal data. More detailed analysis might also be carried out using archival data on valuation and information sources. However, obtaining such data is highly sensitive, especially across different country contexts. Again, this may be an area where detailed cross-country case comparisons may be more feasible. Fourth, our analysis is very much cross-sectional. To the extent that venture capital markets are dynamic, there is a need of future research to consider the impact of learning and the diffusion of practices across markets in different institutional environments. For example, to what extent do valuation methods become more sophisticated over the development of a particular market and hence to what extent does convergence of practice occur? Fifth, the study has limited itself to considering only aspects of the venture capital process relating to valuation and sources of information for valuation. Other important aspects of the venture capital life cycle may be important to consider in cross-country contexts. For example, different approaches to monitoring and exiting investments may be appropriate in different contexts (Bruton et al., 2004). The relative importance of contracts versus relationships may differ between institutional contexts depending on the strength of importance of the legal framework and the importance of social networks. The feasibility of different exit routes may vary between legal systems most obviously with respect to the availability of stock markets. However, sales to strategic partners are typically the most common form of exit, yet a number of issues are raised about this option in different contexts. Not only do acquisitions markets vary in terms of their stage of development but there may be different attitudes with respect to the sale of majority versus minority stakes, there may be different regulations regarding sales to foreigners, etc. Cumming and Fleming (2003) show for the Asia-Pacific region that a high legality index is associated with a greater likelihood of exit through IPO or trade sale but that a high legality index is neither necessary nor sufficient for the development of a successful venture capital market. Further research might usefully examine these issues in different institutional contexts.

For practitioners, the findings of the study highlight the need for venture capital firms entering new markets to examine carefully within-regional differences. These differences are important for the success of venture capital firm entry into foreign markets and the avoidance of exit in the face of failure. While it may be relatively straightforward for venture capital firms to use standard valuation methods, a major issue relates to the informational inputs into those techniques. This in turn raises implications for the recruitment and training of venture capital executives, especially in developing markets. In terms of recruitment there may need to be particular emphasis on hiring executives who are experienced in obtaining deal specific information in a particular local context, which is likely to involve them having highly developed networks. Evidence on these recruitment practices is patchy, but a study of German venture capitalists suggests that greatest emphasis is placed in the temporary transfer of executives from the head offices of foreign entrants, followed by the recruitment of experienced foreign nationals and the recruitment of foreign nationals to head up foreign operations (Hommel and Wright, 2004). Evidence from India also indicates a high level of local national representation among executives even in foreign venture capital firms (Wright et al., 2002). Firms in India were also found to recruit mainly executives who were already trained. If these executives are mainly trained in US methods (Bruton and Ahlstrom, 2003), these may not easily carry over into different institutional contexts, especially with respect to the gathering of information. While venture capital firms may implement firm-wide policies regarding various aspects of their investment behavior, these observations suggest the need to allow local offices a significant measure of discretion in their screening and valuation of businesses. Evidence from Germany indicates that greatest discretion to local offices is given with respect to screening, followed by monitoring and, somewhat less to valuation methods (Hommel and Wright, 2004). Further research might usefully examine whether different institutional contexts influence local recruitment and discretion.

Overall, these observations also suggest that venture capitalists entering new markets in legal and geographical contexts with which they are less familiar, may need to take a longer perspective to become familiar with local information sources and networks, otherwise they may run serious risks of investing on the basis of very inadequate information. The authors have obtained extensive anecdotal evidence from venture capitalists new to foreign markets of being presented with business plans 'thick with dust'. A key test is to find independent reliable sources of information to avoid the problems in investing in such cases. Finally, our study also has implications for policy makers internationally. Efforts to develop and enforce harmonization of regulatory environments may play an important indirect role in spreading good reporting practices that can assist the internationalisation of venture capital both in terms of improving the information available to venture capitalists when they screen and value businesses as consider here, as well as subsequent monitoring of performance. A further issue affecting the availability of information concerns the implications of the general state of development of entrepreneurship and importance of social networks in a particular country. While there is some debate about measuring entrepreneurship in different countries, it appears that its extent does vary considerably internationally (Reynolds et al., 2000). Similarly, the importance and nature of social networks also varies between countries and regions (Claessens et al., 2000). Weak legal systems or legal systems that do not promote disclosure relating to private firms present problems for venture capital firms access to information in environments where perception of entrepreneurs is low and entry to social networks is difficult.

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