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Characteristics of Venture Capital Firms and Investment Appraisals: Australian Evidence^{*}

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and

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This study examines the characteristics of the venture capital industry in Australia. Our analysis is based on responses by thirty-two venture capitalist firms to a comprehensive questionnaire conducted in 2001. We observe that, on average, a venture capital firm has been operating for five years and consists of six investment executives with two specialist investment executives. Each firm has, on average, two formal layers in its investment decision-making process indicating two checkpoints to control risk. With respect to investment appraisal issues, it was noticed that the valuation methods based on discounted cash flows, recent transaction prices for acquisitions in the sector and capitalized maintainable earning (EBIT multiple), are the most important valuation techniques. It was further found that the resolution of information asymmetries through the overall coherence of the business plan and the venture capitalist's own due diligence report were important across the industry when preparing a valuation. Venture capital firms sought to meet a standard benchmark rate of return on equity, on average, the target rate of return was 29% p.a. after tax. Several factors that would lead to vary targeted rates of returns were investigated as well.

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Introduction

The importance of the valuation that a venture capitalist arrives at cannot be understated. The valuation of investment proposals is important because the value of the company determines the proportion of equity the venture capitalists receive for their investments, which in return set the eventual proceeds to the providers of capital (Manigart et al. 1997). In appraising potential investments, venture capitalists are often faced with both uncertainty and adverse selection problems. Uncertainty arises due to problems in forecasting future performance, and adverse selection arises because venture capitalists have to rely greatly on information about the enterprise's state of affairs supplied by the entrepreneur. In appraising investment proposals, venture capitalists seek ways to reduce both types of risk. Venture capitalists use a wide range of information and techniques that are likely to include unpublished accounting information and subjective information (Wright et al. 1996 & Manigart et al. 1997). They also expend considerable effort verifying the accuracy of the information provided. Due to the existence of information asymmetries, the entrepreneur only discloses what is deemed necessary in order to get funding and may deliberately or inadvertently withholding important information and/or giving biased portravals of important facts (Sahlman, 1990; Amit et al., 1993). The venture capitalist is therefore likely to place more importance on reports issued by people other than the entrepreneur (e.g. independent accountants or auditors), in order to supplement the accounting figures and information provided (Manigart et al., 1997).

However, the use of this information may vary depending on the emphasis different venture capitalists put on the stage of investment and on the structure of the venture capital industry prevailing in a country. As cross-country studies of venture capitalists (Sapienza, et al., 1996; Manigart et. al, 1997; Manigart et. al., 2000) have demonstrated, venture capitalists behave differently in different geographical markets, suggesting that venture capital markets are not homogeneous. The structure of the industry can significantly influence the importance of the information drawn on during the screening and the valuation processes. Bygrave et al. (1992, 1999) show that, for instance, the US venture capital market invests a substantially greater proportion of funds into the earlier stage ventures than is the case in Europe, suggesting a greater need to emphasize the skills of the entrepreneur and the market prospect of a new product. In the UK market, Wright et al. (1996b) demonstrated that the skills required for the early as opposed to the buy-out stages of a venture capital market are markedly different. Other studies (Elango et al. (1995) & Wright et al. (1998)) show that the relative importance of different investment stages and organizational structure of venture capitalist firms influence both valuations and the general behaviour (e.g. monitoring practices) of venture capitalists. Due to the unlisted nature of the potential investee firm, the business plan and its' projections, together with historical accounting data (especially cash flow forecasts) can become one of the venture capitalist's most important sources of information (MacMillian et al., 1985 & MacMillian, et al., 1987). In the case of start-ups however, such information may be subject to considerable error and variation forcing venture capitalists to place great reliance on evidence concerning an entrepreneur's track record as a means to gauge the likelihood of success (Macmillian et al., 1987 & Amit et al. 1993).

This study investigates the dominant features of the venture capital market, its main participants and the valuation and investment appraisal methods employed by venture capitalists in Australia. The approach to gathering data for our investigation parallels that used by Wright *et al.* (1996a), Manigart *et al.* (1997) & Manigart *et al.* (2000) who surveyed the venture capital industry in multiple countries. In their original study, Wright *et al.* (1996a), the authors developed the questionnaire that all the subsequent studies have

used, including the present study¹. Wright *et al.* set out to "add to the understanding of venture capitalists' investment decision-making behaviour by providing evidence relating to the general policies they adopt in their approaches to due diligence, valuation methods, benchmark rates of return and adjustments for risk". The authors found that "in order to address potential adverse selection problems, venture capitalists use a wide range of accounting and non-accounting information and techniques relating to the specific factors concerning a particular investment." Similar to the prior studies, our main objective in this paper is to add to the understanding of venture capitalists' investment decision-making behaviour in Australia.

We identified 106 venture capital firms in Australia, to whom questionnaires were sent. After follow-up phone calls, we ultimately received 33 usable responses representing a response rate of slightly more than 30%. The surveys covered a broad range of topics consisting of 19 questions relating to the topics of due diligence, valuation methods, sources of information and factors affecting rates of return. Much of the survey data was collected using a closed set of intervals where the respondents were asked to indicate their company's policy. These scales were numbered 1, 2, 3, 4, or 5 and the indications of the respondents were analysed by investigation of the mean and standard deviation of the responses.

Survey Results

The analysis of results is broken up into three broad sections. Firstly, several characteristics of the venture capital industry and firms are studied. Secondly, due diligence, valuation methods and sources of information used in valuations are investigated. Finally, the targeted rates of return required by the venture capitalists and the adjustments made to them due to the stages of investment and various risk factors are examined.

The Australian Venture Capital Marketplace

Our investigation of the Australian marketplace based on the answers given by the participating VC firms revealed the presence of a range of organisational types. We observed that the dominant venture capital form in Australia is the privately funded venture capital or independent firms which constituted about 55% of the industry. Next about 25% is the captive funds, where a parent company provides funds. Then around 15% is the affiliated funds, where a parent company provides funds but the VC firm has high degree of independence. Finally about 3% is government funded.

Australian venture capital firms invest fairly evenly among seed / start-up / early stage, expansion / development, and later stages like management buy-out. The average fund size of an Australian venture capitalist in our survey was roughly AU \$30 million over the period 1998-2000.

Table 1 reports the average number of years an investment was held by VC firms for different stages of financing. The seed / start-up / early stage ventures are on average held for 4.35 years and are held for longer than any other investment stages.

Our results further indicate that the Australian VC firms prefer not to make investments of less than AU\$100,000. They rather tend to invest close to 50% of their funds in ventures requiring between AU \$1 million and AU \$5 million, with 25% of all investments being less than AU \$1 million and 27% of investments for ventures requiring over AU\$5 million. Bearing in mind the average fund size (AU\$30 million), it may be that the time requirement for a venture capitalist to evaluate small deals (of less than

¹ The authors would like to sincerely thank Mike Wright for supplying them with the questionnaire. Some modifications were introduced to this in order to reflect the particularities of the Australian venture capital market.

AU\$100,000 in capital) cannot be justified given the amount of capital the venture capitalist needs to "put to work".

Australian venture capitalists do make investments outside of their own country. However, the vast majority, more than 85% of investment is within the domestic market. The implication is that the Australian domestic market contains sufficient investment opportunities, or that Australian venture capitalists tend not to have the time / available resources to investigate international opportunities. The number of investments made in Australia's closest neighbour (New Zealand) is equivalent to the number of investments made in the more established markets of the United States and the United Kingdom.

On average Australia's venture capital firms have been operating for about 5 years at the time of this investigation. However there is considerable variation in age amongst the individual firms, the standard deviation being 4.14. This finding indicates a rather young and growing venture capital industry in Australia. The average number of investments made over the last three years per firm is 9.33, however, individual firm investments vary greatly. Each firm currently holds on average 8.5 investments and acts as the lead investor in 5 of their investments.

Most Australian venture capitalists operate from one or two offices, and employ close to 6 investment executives, of whom two-thirds are directly responsible for monitoring portfolio investments, however, in most firms less than 20% of investment executives are solely responsible for portfolio monitoring. This means that in Australia the majority of investment executives are generalists involved in fund raising, investment appraisal or like activities, as well as portfolio monitoring. Interestingly, each firm tends to have one specialist investment executive involved in portfolio monitoring and one specialist investment executive involved in fund raising.

With respect to the investment appraisal activity of a firm, over half of the venture capitalists report having two formal decision making layers, a further 23% having three layers and 17% having only one formal layer.

Valuation

Methods

Various valuation methods are employed and advocated by academics and practitioners. There are, generally, three classes of valuation methods: methods based on expected future cash flows; methods based on accounting information; and methods based on comparables companies' ratios. However, there is some diversity around these basics methods of valuation, including identifying recent prices paid for similar transactions in same sector. Table 2 shows the mean and standard deviations of respondents' answers to questions on valuation methods. The respondents were asked to rank 13 possible valuation techniques on a scale from 1 to 5, with 1 "almost never used" and 5 "almost always used". The most noticeable trend about valuation methods, as reported in Table 2, is the tendency for venture capitalists to use the more formal financial valuation technique such as discounted cash flows. Next, is to gather the details of recent transaction prices in the same sector. Then venture firms use various comparable companies' multiples. The least used methods are those associated with liquidation and replacement costs. This is to be expected as these methods have least appeal for the type of investment venture capitalists are interested in.

Interestingly, Australian venture capitalists employ over half of the valuation methods listed in the questionnaire, suggesting the range of methods for valuation purposes is quite broad. It can be further observed from Table 3 that venture capital firms place the greatest weight on one particular method and use others as a check.

This preference far exceeds the preference shown for all the other approaches questioned. It is noticeable that venture capitalists hardly use the highest valuation arrived at.

There is wide variation between the countries in the use of valuation methods (Manigart et al. 2000). The most popular valuation techniques are prospective or historic price/earning multiples in the United Kingdom, EBIT multiples and recent transaction prices in the sector in the United States, discounted cash flow (DCF) techniques in Belgium and the Netherlands and responses to solicit bids for the potential investee or recent transaction prices in France. Our findings for Australia are very similar to those in Belgium and Netherlands.

Due Diligence

One of the main avenues available to the venture capitalists to reduce adverse selection problems and the future uncertainty inherent in a potential project is through due diligence. They may expend considerable efforts to ensure the robustness of any accounting information. The most significant finding in regards to due diligence information as reported in Table 4 is that venture capitalists find it essential to carry out their own market evaluations. VCs also consider it important to use independent market and accountants' reports. Overall, we found that all listed questions related to due diligence have been considered important by the respondents, suggesting a broad scope taken when conducting due diligence analysis. Interestingly, as a whole, venture capitalists only consider it moderately important to terminate proposals where inadequate performance is available. This response suggests that venture capitalists are interested in current performance, but that they do not necessarily believe that future performance will be poor if current performance is not satisfactory.

In terms of risk, these factors imply that reducing information asymmetry is the most important objective, both by their own sources and by professional analysts (independent reports), followed by reducing moral hazard problems through personal references, and then termination of projects with inadequate performance.

Sources of Information

Venture capitalists attach great significance to financial information and information relating to entrepreneurs and their track records when evaluating investment proposals. Sapienza et al. (1996) shows, however, that in countries where the VC markets are relatively young, venture firms will rely more on financial and accounting information, while countries with more mature VC markets put more emphasis on information on the entrepreneur and the management team, or market and product information. Australian venture capitalists were asked to rank 22 possible sources of financial and non-financial information, with 1=never used and 5=always used; the information sources are ordered in Table 5 from most used to least used. It can be observed that the overall coherence of the business plan and the venture capitalists own due diligence report are of vital influence in preparing a valuation. This importance is consistent across the industry as the low values of their respective standard deviations indicate. The two next most preferred sources of information, considered of significant influence across the industry, were sales and marketing information and the business plan: profit & loss account. The importance of these two approaches suggests that Australian venture capitalists value both immediate financial strength as well as a growth prospects when evaluating potential new ventures. As a general theme, business plan information tended to be more important than third party information, but less important than their own due diligence and sales and marketing information. Apart from financial figures, the moral hazard issues receive a range of rankings with curriculum vitae ranked highly, down to interviews with company personnel which rated only moderately important. Further the use of outside professionals varies from important for due diligence by accounting / consulting firms to only moderately important by other venture capitalists.

Comparing these findings with those of Manigart et al. 2000, it is interesting to note that the first two factors are also among the most important sources of information in several countries investigated. They found that the firm's own due diligence report, except in France, where this item is rated second, is the first source of information. The overall coherence of the business plan is the most important piece of information in France, second in United States and third in United Kingdom, Belgium and the Netherlands. Telling a good story appears to be important everywhere when trying to raise capital.

Target Rates of Return

In setting their target rates of return, venture capitalists usually have an initial requirement for a general benchmark against which proposals need to be gauged. Wright and Robbie (1996a), argue, however, that given the wide variety of possible types of investment candidates, venture capitalists may or may not apply a fixed benchmark to all of them. Hence the need to investigate the extent to which venture capitalists follow a changing target rate of return policy. The factors that might lead to this could be related to a range of factors like industry, length of investment, economic and financial markets conditions, etc.. These issues are investigated in this section.

Benchmark After-Tax Return

Of the respondents whose firms sought to meet a standard benchmark rate of return on equity a mean value of 29% after tax was given as the standard benchmark. Variations in this benchmark were investigated to find whether firms that managed both closed end funds as well as other sources of finance (e.g. own resources), vary their required internal rate of return (IRR). We found that no Australian venture capitalists made such a distinction. Wright and Robbie (1996) also found that the benchmark return used by the UK VC firms was 29.2%.

Required Rate of Return by Stage

Australian venture capitalists use a range of rates of return when evaluating ventures at different stages. Table 6 reports the return that venture capitalists would require for each investment stage. We note that for seed, start-up and early stage projects venture capitalists use a median rate of return of 46 - 55% p.a. There is, however, some variation on this target return, with three-quarters of the venture capitalists indicating target returns ranging from the 36% - 45% p.a. bracket up to the above 55% p.a. bracket.

We find the expansion/development, classified under later stage in Table 6, ventures are evaluated using a median target rate of return of 26 - 35% p.a. that is subject to variations throughout the industry (although the variation here is smaller than for early stage ventures). Two-thirds of Australian venture capitalists have a target rate of return that falls in the below 20% p.a. up to the 31 to 35% p.a. bracket.

Management Buy-In (MBI) and Management Buy-Out (MBO) responses show similar medians to the later stage expansion/development rates of return. Management buy-in has a mean of about 30% p.a. with a median rate of return in the 31 to 35% p.a. range. Management buy-outs, while also having about a 30% p.a. mean, have a median response in the 25 to 30% p.a. range (slightly lower than the MBI median).

As a body, Australian venture capitalists favour target rates of return policies that require investments to meet a standard rate of return on equity and disfavour policies that

require funding structures to meet standard gearing ratios. The most important factor, as shown in Table 7, recognised by the industry was that venture capitalists require investments to meet standard required rates of return on equity according to the risk band of the investment with over half of the venture capitalists responding that it was important or essential. The second most important factor was to require investments to meet standard required rates of return on equity according to the characteristics of each investment.

The assessment of target rates of return was further investigated for factors that would cause variations to the targeted rates of return as shown in Table 8. The respondents were asked to rank from 5, almost always, to 1, never, those factors that deem to warrant adjusting their required return. The most preferred reasons for varying a targeted rate of return was due to market conditions relating to the proposal and the expected length of investment in a particular proposal. Both of these factors usually caused over half of the venture capitalists to vary their rate of return. The third most preferred reason to vary rates of returns was due to the actual cash amount invested in a particular proposal.

It was found that venture capitalists seldom varied their rates of return. As a general theme changes in market / economic / sector conditions were more likely to cause changes in venture capitalist rates of return than changes in capital market conditions.

Assessment of Riskiness

To assess the riskiness of a project, seven items were recognized as possible indicators of the riskiness of a project. The VC firms were asked to rank these items on a five-point scale as with 1 being "irrelevant" and 5 "extremely important". Australian venture capitalists emphasised equally most important the contribution of management in terms of their managerial skills and emphasise on the nature of the product market of the company. Also rated as important by over half of the venture capitalists is the expected time horizon till they exit the company. These three factors most emphasise the factors that affect the risk in a venture. The least emphasised factor was expected dividend yield (2.30), rated as only having slight importance when assessing the risk of an investment, a finding that is consistent with venture capitalists seeking a return through growth.

Conclusions

This study examined a number of characteristics of the venture capital industry in Australia. Our analysis is based on responses by thirty-two venture capital firms to a comprehensive questionnaire. We observed, a venture capital firm has been operating for approximately five years. Slightly, more than half of the VC firms are independent, and about one third are captive, i.e., affiliated to a financial institution or an industrial parent firm. A firm typically consists of six investment executives with two specialist investment executives. Each firm has, on average, two formal layers in its investment decision-making process, indicating two checkpoints to control for risks inherent in the types of investment undertaken by venture capital firms. With respect to the valuation methods employed by the VC firms, our analysis revealed that the modern finance method, discounted cash flows, and recent transaction prices for acquisitions in the sector and capitalized maintainable earning (EBIT multiple), are the most important approaches, suggesting that they are perceived as the best methods to reduce the likelihood of adverse selection. In addition, we noticed that the majority of methods of valuation proposed were used, suggesting the range of valuation methods used among the venture capitalists is quite broad. Furthermore, the importance placed on using one particular method of valuation and then using other methods as checks suggests a self checking process is in place.

The second aspect of the valuation process we considered were the sources of information. It was concluded that resolution of information asymmetries through the

overall coherence of the business plan and the venture capitalist's own due diligence report were vital across the industry when preparing a valuation. We also found that the Australian venture capitalists seem interested in both the existing financial health of the venture as well as its growth prospects, consistently scoring business plan aspects above the other sources tested. Interestingly, the moral hazard issues receive a range of rankings with curriculum vitae ranked highly, down to interviews with company personnel which rated only moderately important.

It was further found that respondents whose firms sought to meet a standard benchmark rate of return on equity, on average, target a rate of return of 29% p.a. after tax. Empirically, we observed that seed, start-up and early stage ventures have a targeted rate of return of 46 - 55% p.a., that expansion and development ventures have a targeted rate of return of 26 - 30% p.a., and that management buy-outs and management buy-ins have a targeted rate of return of 30% p.a.

Investigating policy requirements in the assessment of target rates of return, we noticed that, as a body, venture capitalists favour target rates of return policies that require investments to meet a standard rate of return on equity. When considering policy factor variations, it was shown that market risk (changes in market/economic/sector conditions) is the most important reason to vary targeted returns and generally caused changes in venture capitalist rates of return more often than did changes in capital market conditions did.

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Table 1	
Holding Period of Financing by S	tage

	Mean Score	Std. Dev.
Seed / start-up / early stage	4.35yr	1.16
Expansion / development	3.78yr	1.31
Management buy-out	3.55yr	1.42
Management buy-in	3.18yr	1.50
Secondary purchase / Replacement	2.78yr	1.64

Table 2Methods Used in Valuing Potential Investments

(N = 30)	Mean Score	Std. Dev.
Discounted future cash flows	3.83	1.23
Recent transaction prices for acquisitions in the sector	3.72	1.10
Capitalized maintainable earnings (EBIT multiple)	3.57	1.25
Capitalized maintainable earnings (P/E multiple) (Prospective basis)	3.21	1.29
Industry's special 'rule of thumb' pricing ratios (e.g. turnover ratios)	3.07	1.12
Responses to attempts to solicit bids for the potential investee	3.03	1.30
Capitalized maintainable earnings (P/E multiple) (historic basis)	2.97	1.35
Liquidation value of assets (orderly sale)	2.34	1.34
Recent P/E ratio of the parent company's shares	2.31	1.39
Historic cost book value	2.23	1.48
Dividend Yield basis	2.21	1.24
Liquidation value of assets (forced sale)	2.07	1.19
Replacement cost asset value	2.00	1.25

Note: Where 5 = Almost always used and 1 = Almost never used

Table 3Selection of Final/Benchmark Valuation

(N = 28)	Mean Score	Std. Dev.
Place greatest weight on one particular method and use	4.00	1.15
others as a check		
Use the median value	2.85	1.35
Use the lowest value	2.48	1.23
Use the average valuation	2.46	1.14
Use the highest valuation	1.63	0.92

Note: Where 5 =Almost always and 1 = Almost never

Table 4Sources of Due Diligence Information

(<i>N</i> = <i>32</i>)					Mean Score	Std. Dev.
Carry out or	ur own marke	t evaluati	on		4.59	0.61
Always obt reports	ain independe	ent (from	business plan) market	3.97	1.00
Always hav	e independent	t accounta	ant's report		3.97	1.20
Place great	reliance on pe	rsonal rei	ferences		3.48	1.15
Terminate performance	proposals ce is available		inadequate	current	3.39	1.38

Note: Where 5 = Essential and 1 = Irrelevant

Table 5Sources of Information in Preparing a Valuation

(N = 31)	Mean Score	Std. Dev.
Business plan: Overall coherence of business plan	4.74	0.51
Own due diligence report	4.65	0.61
Sales and marketing information	4.17	0.87
Business plan: profit & loss account	4.16	0.97
Proposed exit timing and method	4.07	0.92
Curriculum Vitae of management	4.07	0.92
Business plan: balance sheet	4.03	0.91
Due diligence by accounting / consulting firms	4.00	0.86
Business plan: unaudited management projections (1 year ahead)	3.93	1.01
Product information	3.86	1.03
Production capacity / technical information	3.83	0.93
Interviews with entrepreneurs	3.81	1.11
Business plan: unaudited 'latest period' financial statements	3.76	0.91
Business plan: unaudited management projections (more than 1 year ahead)	3.68	1.12
Business plan: qualified audit report	3.66	1.08
Interviews with company personnel	3.57	1.25
Business plan: unqualified audit report	3.37	0.96
Other venture capitalists	3.36	1.10
Statistical and informational services	3.33	1.03
Government industry statistics	3.00	1.20
Trade journals	2.97	1.05
Financial press	2.69	1.07

Note: Where 5 = Vital Influence and 1 = No Influence

	Later stage	MBO	MBI	Early stage
Below 20% p.a.	11%	8%	6%	0%
21 to 25% p.a.	11%	17%	11%	0%
26 to 30% p.a.	33%	33%	33%	11%
31 to 35% p.a.	33%	33%	33%	11%
36 to 45% p.a.	11%	0%	11%	16%
46 to 55% p.a.	0%	8%	6%	21%
Above 55% p.a.	0%	0%	0%	42%
Total	100%	100%	100%	100%
Sample size	9	12	18	19

Table 6Rate of Return on Equity by Stage

Table 7Assessment of Target Rates of Return

(N = 31)	Mean Score	Std. Dev.
Require investment to meet standard required rate of return on equity according to the risk band of the investment	4.03	1.05
Require investment to meet standard required rate of return on equity according to the characteristics of each investment	3.97	1.02
Require a rate of return which yields a total cash return commensurate with amount invested	3.68	1.28
Require the funding structure to meet standard gearing ratios appropriate to each investment	3.39	1.36
Require investment to meet standard required rate of return on equity regardless of the investee company's risk profile	3.26	1.09
Require the funding structure to meet standard gearing ratios according to the risk band of the investment	2.94	1.39
Require the funding structure to meet standard gearing ratios	2.81	1.30

Note: Where 5 = Essential and 1 = Irrelevant

Table 8 **Targeted Return Variations**

8 I I I I	3.91 3.77	1.06
The expected length of investment in a particular 3.	3.77	
proposal		1.02
The actual cash amount invested in a particular proposal 3.	3.44	1.13
The industry/product sector of the investment 3.	3.37	1.22
The general economic conditions 3.	8.16	1.04
Whether you have a majority of the equity3.	3.10	1.18
The expected gearing ratio when the finance is structured 3.	3.00	1.13
The actual cash amount you seek to receive from an 2. investment	2.97	0.95
Changes in returns for quoted equities 2.	2.87	1.02
The geographical region of the investment 2.	2.74	1.32
Changes in base rates 2.	2.42	1.12
Changes in returns for long term government bonds 2.	2.35	1.11

Note: Where 5 = Almost always and 1 = Never

Table 9 Assessment of the Riskiness of Investment

(N = 31)	Mean Score	Std. Dev.
Contribution of management in terms of their managerial	4.39	0.72
skills		
Nature of the product market of the company	4.39	0.92
Expected time horizon to exit of company	3.87	0.78
Nature of the capital markets	3.35	0.91
Financial contribution of management	3.33	0.96
Expected time horizon to redemption of preference shares	3.17	1.26
Expected participating dividend yield	2.30	1.18

Note: Where 5 = Extremely important and 1 = Irrelevant