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A Review of Research into Venture Capitalists' Decision Making:  
Implications for Entrepreneurs, Venture Capitalists and Researchers

# **A Review of Research into Venture Capitalists' Decision Making: Implications for Entrepreneurs, Venture Capitalists and Researchers**

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## **Abstract**

*A recent review of the current literature on how venture capitalists make their investment decisions suggests that the decision-making process adopted by venture capitalists is more an art than a science. The review also highlights the fact that researchers have not been able to identify the key decision-making variables that lead to making a successful investment choice. Nor do venture capitalists understand their own decision-making process. This paper addresses these issues and suggests how entrepreneurs attempting to obtain equity finance from venture capitalists may structure proposals to have a better chance of acceptance. The paper concludes with a discussion of directions for future research.*

Key Words

venture capital, evaluation, decision making, criteria

## **Introduction**

Venture capital (VC) is usually defined as an independently managed, dedicated pool of capital that focuses on equity or equity-linked investments in privately held, high-growth companies (Lerner 2000). Initial interest of researchers specifically addressed VC evaluation, criteria used in evaluating investment opportunities and the decision-making process used by venture capitalists (VCs). Ferris (2001, p. 46) emphasised the importance of the

VC industry in Australia, 'I argue that absent vibrant and risk seeking venture capital markets, Australians will face a steady decline in their relative living standards in this century'. Given the espoused importance of the industry it is of interest to review the available literature on VC decision making and consider the implications for entrepreneurs, VCs and researchers.

A review of the current literature on how VCs make their investment decisions suggests that the decision-making process adopted by VCs is more an art than a science. VCs have emerged as an important area of research over the past two decades. The majority of this research has concentrated on the US experience (Wright & Robbie 1996). However, more recently, a significant amount of research is beginning to emerge in the UK, the second-largest VC industry after the US (Bank of England 2001). Further research is expected to come from Europe and the Asia Pacific as the VC industry matures in these regions.

The inability of researchers to clearly define VCs' decision-making process and the inability of VCs to understand their own decision-making process (Khan 1987; Pfeffer 1987; Sandberg, Schweiger & Hofer 1988; Zacharakis & Meyer 1998; Shepherd 1999) have made it difficult for entrepreneurs to present their proposals to VCs when seeking equity capital. Previous research results have failed to obtain convergence on the evaluation criteria used by VCs in evaluating investment proposals.

The purpose of this paper is to provide a review the body of research relating to the VC decision-making process, specifically addressing the screening and evaluation criteria used by VCs in evaluating investment proposals. To achieve this aim, this paper will first look at the stages of the VC process, review the literature pertaining to proposal screening and evaluation and summarise the research findings and conclusions. The next section suggests how entrepreneurs seeking funds from VCs can structure their proposals in light of the conclusions drawn from this review. The last section identifies possible areas of future research.

## **Stages in the Venture Capital Process**

It was found that VCs apply a distinct decision-making process consisting of a number of stages (Wells 1974; Tyebjee & Bruno 1984; Silver 1985; Hall 1989). The summary of the various research findings shows that all agree that the VC decision-making process consists of multiple stages (Hall & Hofer

1993), which is summarised in Table 1. The decision-making process is commonly referred to in the literature as a five- or six-stage process.

It can be easily inferred from Table 1 that the evaluation and due diligence stages can be combined. The basis of this is that one is usually not performed without the other. VC due diligence is the process and activity whereas evaluation is the output (Wells 1974; Tyebjee & Bruno 1984; Silver 1985; Hall 1989). The output (due diligence report) is one of the most important sources of information used by VCs for carrying out the valuation of a new venture (Dixon 1989; Wright & Robbie 1996; Manigart et al. 1997).

**Table 1: Stages in Venture Capitalists' Management Process**

Process Stage	Wells (1974)	Tyebjee & Bruno (1984)	Silver (1985)	Hall (1989)
1	Search	Deal origination	Search	Generating deal flow
2		Screening	Initial Screen	Proposal screening
				Proposal assessment
3	Evaluation	Evaluation		Project evaluation
			Due diligence	Due diligence
4		Deal structuring	Deal structuring	Deal structuring
5	Venture board meetings and operations	Post investment activities	Monitor progress	Venture operations
6	Cashing out		Cashing out	Cashing out

Source: Hall & Hofer 1993, Table 2, p. 28.

Analysis of Table 1 suggests that not all researchers appear to agree on what constitutes this six-staged process. In broad terms, there appears to be at least agreement on the following stages: 1) deal generation; 2) initial screening of proposals; 3) project evaluation and due diligence; 4) deal structuring; 5) post-investment activities; and 6) cashing out or exit activities.

*Deal generation* refers to deal flow that relates to establishing good sources of referrals that will generate prospective investment opportunities.

*Initial screening* involves a precursory review of an investment proposal. It involves the perusal of a proposal's executive summary and or business plan to determine whether a closer evaluation is worthwhile.

*Evaluation* involves a greater scrutiny of the business plan. The evaluation stage invariably includes undertaking due diligence, which provides the VC with more information from which a decision can be made.

*Deal structuring* occurs after the VC has decided to proceed to invest in a particular proposal. This consists of the VC placing a value on the business and hence the equity share in exchange for the VC's investment. It also includes a range of legal documentation and the basis on which the VC and the entrepreneur agree to work together. A document summarising the terms and conditions, referred to as a 'Term Sheet' is presented to the entrepreneur summarising the terms and conditions associated with a VC's decision to invest.

*Post-investment activities* include the VC's involvement with its investee companies comprising the VC's investment portfolio. This can include site visits, mentoring, monitoring, raising additional capital and providing strategic advice and representation on the board of directors. This is the stage in which a VC will provide what is commonly referred to as 'added value'.

*Cashing out* or investment exit involves the VC divesting its investment to obtain an economic gain. VCs play an active role in directing and assisting a company and its management towards a merger, trade sale, initial public offering or other exit strategies that may maximise a VC's return on its original investment.

The distinction between screening and evaluation is an important one as it suggests that VCs could be using different criteria in making their decisions at different stages in the decision-making process (Riquelme & Rickards 1992; Hall & Hofer 1993; Fried & Hisrich 1994; Boocock & Woods 1997).

The screening process focuses on a small subset of criteria which is non-compensatory, that is, an unacceptable value on one criterion cannot be offset by a higher value on another. The evaluation criteria used in the screening stage have been identified as market size and potential growth, a significant competitive advantage, uniqueness of the product/service, management team, funding requirement, investment stage, the industry, profit potential and economic return (Golis 1998). During the screening stage, VCs screen and assess investment opportunities, very rapidly reaching a 'Go/No Go' decision in an average of less than six minutes, and less than 21 minutes on proposal assessment (Hall & Hofer 1993).

The evaluation stage (due diligence) does allow for compensatory rules to be applied, that is, a low score on one decision variable can be offset by a higher score on another (Riquelme & Rickards 1992). The evaluation criteria used in this stage are the same as that for screening but with less subjectivity, a greater degree of in-depth analysis and a greater concentration on the financial aspects of the proposal's budget forecasts (Riquelme & Rickards 1992; Golis 1998). The evaluation process (due diligence and valuation) is estimated to take an average of 97 days, ranging between 52 days and 142 days (Fried & Hisrich 1994).

This staged approach to the VC process assists researchers in categorising what VCs do (Sahlman 1990). It also allows for the segmentation of research in addressing specific segments of the VC process, thereby providing researchers with an appropriate road map for VC research. This paper specifically addresses the research that addresses the screening stage (stage 2) and evaluation stage (stage 3) of the VC process described earlier.

## **Proposal Screening and Evaluation**

A relatively large body of research has concentrated on identifying and ranking the evaluation criteria used by VCs in screening and evaluating new venture proposals compared to the other stages in the VC process (Tyebjee & Bruno 1984; MacMillan et al. 1985; Robinson 1987; MacMillan et al. 1987; Sandberg et al. 1988; Hisrich & Jankowicz 1990; Zacharakis & Meyer 1998; Shepherd 1999).

The principal research undertaken in determining the evaluation criteria and decision-making process is regarded as that undertaken by Tyebjee and Bruno (1984); MacMillan et al. (1985); MacMillan et al. (1987); Robinson (1987) (Sandberg et al. 1988).

These earlier studies had a number of limitations, such as the unequal influence of respondents, problems of retrospective reporting and VC self-reporting (Tyebjee & Bruno 1984; MacMillan et al. 1987; Robinson 1987). In addition, the use of VC responses to questionnaires rather than identifying the actual decision-making process used by VCs left the research open to errors and biases associated with self-reporting (MacMillan et al. 1985; Robinson 1987). The earlier research did not adequately examine the decision-making process but focused on the criteria used in the evaluation process, how the evaluation criteria were applied and the level of importance given to the criteria by respondents (Sandberg et al. 1988; Hall and Hofer 1993).

Concerns began to be raised about the methodology used in these surveys and how they could be addressed (Sandberg et al. 1988), especially when the methodologies were attempting to model human decision making. Human decision making includes, among other things, perceptions, emotions and cognitive processes (Svenson 1979), which researchers have continually found difficult to model.

In addition, there was the inherent assumption that the respondents (VCs) were homogeneous in their approach to decision making (MacMillan et al. 1985). MacMillan et al. (1985) clearly identified the presence of three distinct groups within their data sample that had unique perceptions of risk and unique views on how they evaluated investment opportunities. This confirmed that VCs are not a homogeneous group and not subject to generalisations (MacMillan et al. 1985; Robinson 1987; Christopher 1994; Manigart et al. 2000).

These methodological problems meant that researchers could not replicate findings (MacMillan et al. 1987; Rah et al. 1994). Hall and Hofer (1993) compared the results of the research studies undertaken by Wells (1974), Poindexter (1976), Tyebjee and Bruno (1984), MacMillan et al. (1985; 1987), which showed a low convergence of evaluation criteria across these studies. Zacharakis and Meyer (1998), who included additional research results from Robinson (1987), Timmons et al. (1987), and Hall and Hofer (1993), further expanded this comparison. The investment criteria are summarised in Table 2.

An inspection of Table 2 reveals that only six factors – (1) management skill and experience; (2) the venture team; (3) product attributes; (4) market size; (5) market growth; and (6) expected ROI – had 50% or more of the eight studies agreeing (four or more out of eight studies). The inevitable conclusion that can be drawn from Table 2 is the non-reliability (survey result replication) of these studies, throwing doubt on some of the conclusions about the criteria used by VCs in screening and evaluating investment proposals. This poor convergence of research findings supports some researchers' conclusions that the VC process is more an art than a science (Pence 1982; MacMillan et al. 1987; Waldron & Hubbard 1991, Wright & Robbie 1996). It is an art in the sense that it involves the ability to interpret human relationship issues, values and attitudes with a goal for financial success. It is a science as it requires the understanding of environmental, political, product, market, industry, competitive, technology, strategy and financial issues (Ferris 2000).



An additional criterion was suggested as being important to those stated in Table 2, namely, competitive conditions, market share and business strategy (Roure & Keeley 1990). Incorporating these additional elements into the criteria appearing in Table 2 approximates Porter's model of the five forces of competition (Golis 1998; Van Osnabrugge 1998). Porter's (1980) model incorporates elements that are designed to capture: (1) rivalry among existing firms (competitive behaviour); (2) bargaining power of suppliers; (3) threat of new entrants; (4) bargaining power of buyers; and (5) threat of substitute products or services. This provides a good construct from which to evaluate a new venture, suggesting that some VCs use Porter's model or a similar construct in the evaluation process (Van Osnabrugge 1998; Golis 1998).

Another outcome of this earlier research concluded that VCs were not taking financial information into account in their evaluation process. However, some researchers acknowledged that VCs were concerned with the trade off between a venture's risk and return (Tyebjee & Bruno 1984; MacMillan et al. 1985; 1987), but little emphasis was placed on financial information due to the uncertainty associated with the budget forecasts provided by new ventures (Hall & Hofer 1993).

A Review of Research into Venture Capitalists' Decision Making: Implications for  
Entrepreneurs, Venture Capitalists and Researchers 8

**Table 2: Comparison of Venture Capital Evaluation Criteria**

Evaluation Criteria	Wells (1974)	Poindexter (1976)	Tyebjee & Bruno (1984)	MacMillam et al. (1985)	MacMillam et al. (1987)	Robinson (1987)	Timmons et al. (1987)	Hall & Hofer (1993)
<b>Methodology</b>	Personal Interviews	Questionnaire	Phone Survey and Questionnaire	Questionnaire	Questionnaire	Questionnaire	Unstructured Interviews	Verbal Protocols
Sample Size	8	97	87	100	67	53	47	16
<b>Characteristics of the Entrepreneur</b>								
- Management Skill and Experience	X	X	X	X	X	X	X	X
- Venture Team				X	X	X		X
- Management Stake in Firm		X	X					
- Personal Motivation	X					X		
- Entrepreneur Personality				X				
<b>Product/Service Characteristics</b>								
- Product Attributes	X		X	X	X			
- Product Differentiation			X				X	
- Proprietary	X			X	X			
- Growth Potential			X					
- Market Acceptance				X			X	
- Prototype				X				
<b>Market Characteristics</b>								
- Market Size	X		X				X	X
- Market Growth	X		X	X	X	X	X	
- Barriers to Entry			X				X	
- Competitive Threat				X	X		X	
- Venture Creates New Market				X				
<b>Financial Characteristics</b>								
- Cash-out Method	X		X					X
- Expected ROI		X	X	X			X	
- Expected Risk		X						
- Percentage of Equity		X						
- Investor Provisions		X						
- Size of Investment	X	X						
- Liquidity				X	X	X		
<b>OTHER</b>								
- References	X					X		
- Venture Investment Stage	X	X	X					
- Venture Capitalist Criteria								X

*A Review of Research into Venture Capitalists' Decision Making: Implications for  
Entrepreneurs, Venture Capitalists and Researchers* 9

Source: Zacharakis & Meyer 1998, Table 1, p. 6.

## **The Emergence of Two Schools of Thought**

A problem began to emerge concerning the methodologies used by researchers that could be classified into two separate schools of thought. The first group of researchers (Wells 1974; Poindexter 1976; Tyebjee & Bruno 1984; MacMillan et al. 1987; Robinson 1987) identified the evaluation criteria and their relative importance using VCs' perceptions, whereas the second group (Roure & Maidique 1986; Stuart & Abetti 1987; Dubini 1989) used VCs' pre-funding criteria (Rah et al. 1994). The different dimensions and variables used in these studies made it impossible to compare the two groups' research findings (Rah et al. 1994).

An attempt was made to overcome these limitations by standardising the research methodology so that evaluation criteria could be used to compare actual performance against the criteria used by VCs in their evaluation process (Rah et al. 1994). One of the key findings made by Rah et al. was that financing ability played a far greater role than previously perceived by VCs or acknowledged by them and it ranked higher than previously identified in the earlier research. The research results of Rah et al. were supported by other researchers' findings (Pence 1982; Hisrich & Jankowicz 1990; Hall & Hofer 1993). This variable (finance) has consistently been identified as a less important evaluation criterion in the seminal research. The results obtained by Rah et al. (1994) supported earlier research undertaken by Sandberg et al. (1988), which used verbal protocols to identify the actual decision-making process of VCs compared to their espoused decision-making process. Financial information and risk/return was found to be important especially in the evaluation and due diligence process (Dixon 1989).

Some researchers have concluded that, in most cases, relying on VCs' self-reporting on how they make their investment decisions and what criteria they use has been inaccurate (Sandberg et al. 1988; Zacharakis & Meyer, 1998; Shepherd, 1999). This has resulted in researchers concluding that VCs have limited insight into their own decision making and are poor predictors of investment outcomes (Khan 1987; Sandberg et al. 1988; Pfeffer 1987; Zacharakis & Meyer 1998; Shepherd 1999).

It is clear from this review that there is a divergence in research findings principally due to methodological issues. Furthermore, these differences throw some doubt on the usefulness of research findings and how these findings can be put to practical use by both VCs and entrepreneurs.

## **Assessing Investment Opportunities**

VCs screen and assess investment opportunities very rapidly, reaching a 'Go/No Go' decision in an average period of less than six minutes, and less than 21 minutes on proposal assessment (Hall & Hofer 1993). Clearly, VCs require an effective and efficient screening and evaluation process, given the number of proposals they may review each year and that the number of personnel employed by VCs is at a bare minimum (Golis 1998). Furthermore, the success rate of VCs is significantly better than the success rate of new ventures (Dorsey 1979; Davis & Stetson 1984). This suggests that, in general, VCs do have an effective and efficient screening and

evaluation process (Hall & Hofer 1993). This insight requires the examination of VCs' decision-making processes rather than simply identifying the evaluation criteria used by them (Sandberg et al. 1988).

Modelling human decision making can be difficult as it involves perceptions, emotions and cognitive processes (Svenson 1979). The review of the body of research would appear to support this view. It may, therefore, be hard to model VC decision-making processes and to identify a general set of evaluation criteria. Zacharakis and Meyer (1998) concluded that VCs' understanding of their actual decision-making processes was very poor. Shepherd (1999) supported this conclusion in his study of 66 Australian VCs.

VCs' investment ratios vary between 1.46 percent (Boocock & Woods, 1997) and 3.4 percent (Bannock, 1991) of proposals considered, which implies that investment proposals presented to VCs have a very small chance of successfully obtaining the necessary finance (Australian Venture Capital Guide 2001). This high rejection rate is further compounded by the fact that VCs have a failure rate on their investments averaging as high as 30%-40% (Cooper & Bruno 1977; Bruno & Tyebjee 1983; Plummer 1987; Smallbone 1990; Timmons 1990; Golis 1998).

The rejection occurs at the initial screening stage or at the valuation stage, with the majority rejected at the screening stage (Hall & Hofer 1993; Boocock & Woods 1997). The reasons for rejection are different for each stage. At the screening stage rejection can occur if the proposal fails on only one criterion that is a fatal flaw (Mason & Harrison 1996). The decision-making process of VCs can be broken into two distinct parts: screening and evaluation (Boocock & Woods, 1997; Riquelme & Rickards, 1992). As mentioned earlier, screening focuses on a small subset of criteria that is non-compensatory (Riquelme & Rickards 1992).

The criteria used in the screening stage are: market size and potential growth; a significant competitive advantage; uniqueness of the product/service; management team; funding requirement; investment stage; the industry; profit potential; and economic return (Golis, 1998).

The evaluation stage (due diligence) does allow for compensatory rules to be applied (Riquelme & Rickards 1992). The evaluation criteria used in this stage is the same as that for screening but with less subjectivity and a greater degree of in-depth analysis with a greater concentration on the financial aspects of the proposal (Riquelme & Rickards, 1992; Golis 1998).

A study undertaken by Boocock and Woods (1997), in the UK, identified the reasons why proposals were rejected and how many were rejected at the screening stage and how many at a later stage. These results are summarised in Table 3. The findings appearing in Table 3 indicate that the criteria for rejection changes as the application progresses through the decision-making process. This confirmed previous research findings by Mason and Harrison (1995).

**Table 3: Reasons for Rejecting a Proposal**

Reason for Rejection	Initial Screening	After 1 <sup>st</sup> Meeting	Sub-Total	After 2 <sup>nd</sup> Meeting	Grand Total
Incomplete Plan	29%	1.0%	30%	1.0%	31%
Market Characteristics	12%	0.5%	12.5%		12.5%
Lack of Unique Selling Point	4%		4%		4%
Start up Finance	6%	1.0%	7%	0.5%	7.5%
Project Size	7%	0.5%	7.5%	0.5%	8%
Management Skills/Experience	4%	1.0%	5%	1.5%	6.5%
Excessive Risks	5%	0.5%	5.5%	1.0%	6.5%
Financial Factors	2%		2%		2%
Application Withdrawn	4%	1.0%	5%	5.9%	11%
Other Reasons	6%	2.0%	8%	2.5%	10.5%
Total	80%	7.5%	87.5%	12.5% <sup>(1)</sup>	100%

Note: (1) Rounding error

Source: Boocock & Woods 1997, p. 57, Table 4.

Table 3 summarises the rejection rates as a percentage of total applications against the rejection criteria used by VCs at different stages of the process. A review of Table 3 highlights that, in this particular study, 80% of all proposals were rejected at the initial screening stage; 7.5% after the first meeting, and a further 12.5% after the second meeting. It is clear that the greatest hurdle that entrepreneurs have to overcome is to get past the initial screening stage.

It is also relevant that the most common cause of rejection (30%) is due to an incomplete business plan being presented. The next most important reason for rejection is market characteristics/unique selling point (16.5%). What is significant is that managerial skill and experience accounted for only half the rejections as market characteristics/unique selling point. However, previous research has consistently reported that VCs rate different management issues as the most important evaluation criterion. This inconsistency is not surprising considering the fact that many researchers have found trouble replicating previous research findings, as discussed earlier.

Additional conclusions drawn from the Boocock and Woods (1997) study summarised in Table 3 conclude that the rejection decision is made on a single issue and that financing issues do not play a major role in the screening and evaluation process. The Boocock and Woods (1997) study was undertaken by researchers reviewing data drawn from a VC's written records and comments made at the time they were entered into the written record. The managers of the VC fund were also unaware that their comments were being used for research purposes. This eliminated the errors and biases in earlier studies stemming from self-reporting. It should be

noted that Table 3 does not indicate whether a specific criterion is more important than another in terms of the arriving at a rejection decision.

This review suggests that there is little empirical evidence to support a consistent framework or theoretical model that can be applied to VC decision making, particularly in the screening and evaluation stages of the process.

## **Summary and Conclusions**

This review addressed the body of research pertaining to how VCs make their investment decisions. In addressing this question, this review concentrated on the two stages of the VC decision-making process: initial screening and evaluation.

Research findings indicate there is some agreement on the stages of the VC decision-making process, but little agreement on the evaluation criteria used by VCs when screening and/or undertaking a project evaluation. The difference in research results has been attributed to methodological differences in research design.

One research group concluded that VCs do not fully understand their own decision-making process. There is documented evidence that a proposal previously rejected by VCs was subsequently approved when it was presented again by another VC who had decided to invest. This suggests that VCs can change their evaluation criteria mid-stream and that relationships are more important than objectiveness (Steier & Greenwood 1995).

There does not appear to be any general agreement on decision criteria used by VCs in evaluating investment proposals. This has led some researchers to conclude that each VC needs to be approached independently, addressing their unique investment criteria. Researchers have been unable to replicate other researchers' findings and there is a lack of convergence on the existing survey results, the end result being the inability of researchers to develop a decision-making framework or model that uniformly describes the VC investment screening and evaluation process.

VCs spend a very short time on the initial review of a proposal (screening process), which averages six minutes per proposal. This suggests that those seeking finance from VCs must be able to get the VCs' attention within a very short period.

VCs will reject a proposal at the screening stage if it has a fatal flaw; rarely is a proposal rejected for more than one or two reasons. They do not take into account the degree of the flaw being offset by a comparative strength in another criterion. This stance is relaxed if the proposal gets to the evaluation stage, when the VCs apply compensatory processes.

Only a very small proportion of investment proposals (1.4%-3.4%) presented to VCs actually receive the requested funding.

## **Implication to Public Policy and Private Practice**

VC and entrepreneurship have a significant impact on economic growth, employment and the creation of new technologies that may have an impact on standards of living. This contribution has been clearly identified in a number of research reports. It is therefore of significant interest to those who develop public policies.

The economic contribution and importance of entrepreneurial endeavour has been widely reported on and analysed, making entrepreneurship and VC important public issues for economic growth, employment growth and technical advancement. As discussed in this study, the lack of adequate education and on-going training and development in both VC and entrepreneurship is a constraint on this sector. The establishment of appropriate public sector policy in overcoming this constraint will make provision for a more dynamic sustainable cooperative endeavour and relationship between VCs and entrepreneurs.

In a similar manner, improving the access to, and quality and meaningfulness of, an appropriate education program will improve the overall quality and proficiency of this industry sector. Moreover, a valuation model which can adequately address the imperfections associated with the current methods and techniques used by VCs in appraising new ventures will improve VC/entrepreneur relationships as well as their efficacy. Furthermore, the development of a valuation methodology that incorporates the requirements of both VCs and entrepreneurs in linking creating shareholder value to planning, strategy to budgeting and monitoring to management compensation is likely to make a significant improvement over current methods. Such methodologies already exist in EVA<sup>TM</sup> and Balanced Scorecard which may require further research and analysis to design an approach that overcomes the current shortcomings. An appropriate education curriculum that incorporated these disciplines and methodologies is expected to make a significant difference to the VC decision-making process and ultimately financial rewards to both VCs and entrepreneurs. This could open up avenues for further research.

The emphasis of VCs to invest in late-stage investments (expansion/growth, MBO and MBI) leaves a significant gap in funding available specifically to early-stage investments. The Australian government has attempted to correct this imbalance through a number of initiatives. These include the COMET program (Commercialising Emerging Technologies), IIF (Innovation Investment Fund), CRCs (Cooperative Research Centres, R&D Start Program, ISUS (Innovation Start Up Scheme) and PDFs (pooled Development Funds); all of which have failed to improve the ratio of VC investment in early-stage investments.



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