

New Zealand's Angel Capital Market

The supply side

A report prepared by
Infometrics Ltd

for

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Introduction

One of the central aims of the government's Growth and Innovation Framework, is to create an environment that encourages innovative and fast growing companies with the potential to create wealth for their owners and significant value-added for New Zealand.

There are at least three reasons for studying the early-stage informal capital market:

- A well functioning early-stage capital market is critical to nurturing innovative and fast growing companies.
- A paucity of research, and the private and heterogeneous nature of this part of the capital market, means that it is not particularly well understood either by participants or policy makers.
- The capital and expertise of high net worth individuals (the supply side of the market) could represent a major source of untapped economic potential for New Zealand.

Capital is a fundamental input to business and economic growth. A lack of capital is often blamed for frustrating the growth of small, start-up businesses. Early-stage capital can also bring with it complementary skills and expertise that can help the business to expand.

The traditional sources of capital for businesses are retained earnings, debt provided by banks or the bond market, publicly traded shareholder equity, and venture capital. Small, young businesses can find it difficult, or impossible, to access capital from these sources, and therefore rely more heavily on informal supplies of capital. A widely used term for those who supply small amounts of equity capital on an informal basis to start-up and early-stage businesses is "angel investor".

The government's Investment Ready Scheme and its successor, the Escalator service, have been aimed at improving the preparedness of businesses and entrepreneurs to attract early-stage and venture capital.

The focus of this study is on the supply of early-stage capital and how this part of the capital market functions. In particular, we are concerned with understanding what constitutes the early-stage capital market: who participates in it, its size and how it operates. We are also concerned with understanding what can be done, both by market participants and, potentially, the government, to improve the functioning of the early-stage capital market in New Zealand.

Objective

The objective of this work is to identify and analyse the key characteristics of the angel capital market in New Zealand - how it works, its size, significant developments, and differences with other countries.

In fulfilling the objective we have drawn on a survey of angel investors conducted by the Ministry of Economic Development (MED). We outline the background to the survey in the following section and draw on the survey results to illustrate and highlight points in subsequent sections.

In section 2 we use desk research, plus results from the survey, to try and establish the size and scope of the early-stage informal capital market in New Zealand.

Based on interviews with participants in the informal capital market (an environmental scan), as well as the survey results, we outline how this part of the capital market works, how it has developed and key issues in section 3.

A detailed analysis of the survey results is discussed in section 4 and in section 5 we examine the public policy issues surrounding the informal capital market and in particular possible policy initiatives.

Throughout the report we compare and contrast what we learn about New Zealand's informal capital market with the results of similar studies in other countries.



1. THE RESEARCH

The study is based on two main areas of research – the survey conducted by MED and an environmental scan. These two areas of research are outlined below.

The survey

One of the main issues surrounding angel investment is that the individuals concerned are often not part of any formal organisational structure, do not seek publicity and are often unaware that they are engaging in an activity that is of interest to researchers.

As part of this study MED conducted a web-based survey of angel investors using investor lists owned by EDANZ (the body representing regional and local Economic Development Agencies), VCapital and MINE (a nation-wide business angel network based in Wellington and linked to Industrial Research Limited). EDANZ runs deal broking and investor opportunity schemes as well as an Investment Ready training service. It maintains a database of investor contacts and accesses other investors via the contacts available through the regional EDAs. In total, 11 different organisations provided investor names for the final survey sample of 2,564 contacts.

The survey was conducted online using email notification. The original sample size fell by around 850 for the following reasons:

- no email address was supplied or was available;
- email addresses were rejected;
- responses by a third party indicated that the contact's email details were no longer valid; and
- people directly replying, indicating that they had been duplicated in the survey selection.

The final total of delivered emails to individuals was 1,711. Of this 642 responses were received. This number was further reduced by:

- removing individuals that responded more than once; and
- removing respondents who supplied no (or only one) answers:

The final response rate was 611 or 35.7%. Of these, 348 met our definition of an angel investor:

they had engaged in private equity investment in another individual's company where there was no family or other connection between themselves and the principal owner.

Our understanding is that both the absolute number of respondents and the response rate as a proportion of those approached, are very good by international standards for this subject. Indeed the number of respondents as a proportion of the likely total number of angel investors in the New Zealand population is probably quite high. Thus the survey delivers a considerable amount of descriptive information about angel investors.

Survey Design

The majority of surveys (including the MED survey) cover the “ABC’s” of angel investing:

- Attributes
- Behaviours
- Characteristics

They show that investors are generally high net worth individuals, usually men between the ages of 45 and 60 years old. Angel Investors have usually run their own business, have exited or reduced their role and looked for a new challenge. The Ministry’s survey was an attempt to replicate these studies to provide a foundation for further research into the New Zealand market.

The MED survey was developed using input from those involved in the angel capital market and tested from a number of perspectives – information/research, questionnaire design and respondent cognition. The results from the survey meet both the government’s need for information about this market as well as providing valuable information for individuals and organisations involved in the market, and academics.

See Appendix I for the questionnaire used to survey potential angel investors.

Environmental scan

The aim of the environmental scan is to identify and analyse the key characteristics of the New Zealand angel capital market: who participates in it, how it operates, significant developments over time, and differences and similarities with other countries.

The scan is based on desk research as well as a series of interviews with a range of people involved in the early-stage capital market including: economic development agencies, brokers, accounting firms and specialist, early-stage capital advisors, actual investors and those managing investor networks. In total 19 people were formally interviewed either face-to-face or via telephone.

The desk research focused on estimating the current size and scope of the angel capital market in New Zealand, and the similarities and differences between the angel capital market in New Zealand and other countries. The interviews focused on how the market operates, including understanding significant recent developments. The survey focused on the characteristics of those who participate in the market and also sheds light on how it operates.

2. THE INFORMAL CAPITAL MARKET

The informal capital market covers a wide range of investors, from founders, families and friends through to business angels. It is generally distinguished from the formal capital market by the fact that the investment is done by individuals directly rather than via a specific entity (normally a company, such as a venture capital fund).

This report focuses specifically on angel investors – people who invest directly, either as an individual or as part of a group, in a privately owned businesses where there is no close family or other connection between themselves (the investor) and the business owner.

What are the typical characteristics of an angel capital market?

- Angel capital is a subset of the private equity market.
- It is generally accepted that this market lies somewhere between the capital provided by founders/families/friends and venture capital.
- It comprises high net worth and high income individuals with a high tolerance for risk, investing alone or in informal groups or syndicates.
- It is a key source of seed and start-up capital to entrepreneurs with a specific and commercially promising idea.
- It is less structured than the venture capital market, but angels are probably more objective than the friends and family capital providers.
- It provides relatively small amounts of capital to new businesses and is frequently supplemented with human capital (the latter may be business, technical, or marketing advice that will be provided in exchange for equity). It is colloquially known as smart money.

The angel capital market can be defined by the stage of a company’s development at which the capital is applied. The following diagram is consistent with international studies of the informal capital market, with some modification to reflect what we understand to be the situation in New Zealand (see question 7 in Appendix I for details of the various segments/stages of capital market).

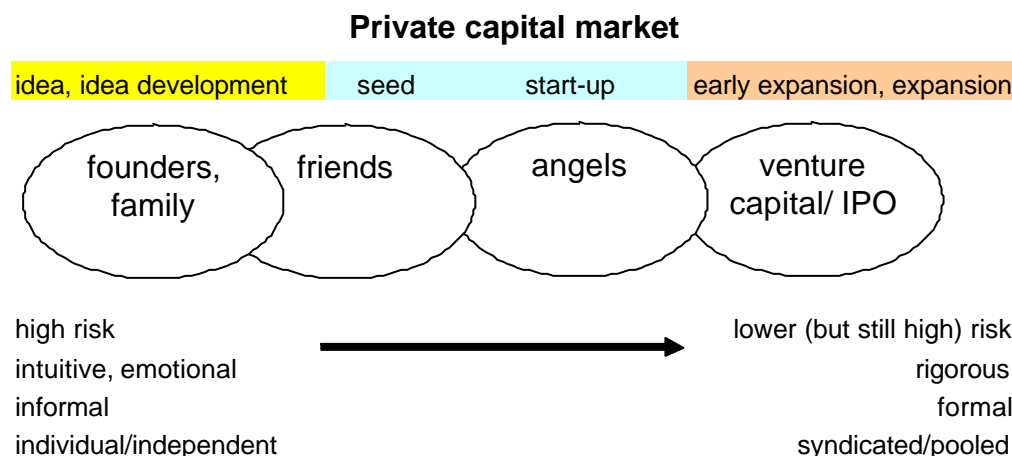


Figure 1

There is considerable overlap between the main sources of informal capital. "Founders and families" are the first source of funding for new ideas or ventures and often that funding will come via mortgage finance. "Friends" potentially cover a wide range of people from close family friends to acquaintances who may already be investing in start-up businesses and therefore could more strictly be described as angel investors. Angel investors tend not to have any previous relationship with the entrepreneur and therefore take a more objective approach to determining whether or not to invest. Angel investors range from those taking a passive approach (backing others' judgements), through to hands-on investors providing advice or direct management input to help the business become established. In many cases the latter group of angel investors will take as rigorous an approach to their investing as some venture capitalists. A key difference between angel and venture investors is that angels tend to invest as individuals (often as part of a group) operating part-time, whereas venture capital generally comes via a company or fund with full-time managers and a board, using formal analysis and investment procedures.

There is some blurring in New Zealand between angel and venture investors, which may reflect the relative immaturity of the angel and venture capital market in New Zealand - the market is still segmenting and specialising. Even at maturity, though, there will be a reasonably close link between angel and venture investors as firms look for larger funding rounds and more sophisticated management and marketing input.

Size of the market

Any attempt to define the size and scope of one part of the informal capital market (angel capital, for example) is fraught with difficulty. Firstly, because it is hard to determine precisely where this particular part of the market begins and ends, and secondly, it is a fragmented and un-reported part of the capital market.

The Ministry of Economic Development has commissioned Statistics New Zealand to conduct a "Business Finance Survey" in August 2004. The results of that survey are likely to provide a more robust estimate of the stock of angel capital invested in New Zealand.

It is important for this study that we establish some measure of the relative size of the angel capital market in terms of money invested, number of active investors and recipients, and geographic and industry spread. Determining the size of the market is important for the government and industry to get a good understanding of how important the various components of the early-stage capital market are and how it compares to similar markets in other countries. Our approach is to identify broad boundaries that we can be confident capture angel investment activity and then try to tighten those boundaries.

In simple terms the household sector owns the business sector either directly via equity in businesses, or indirectly through loans to businesses from household deposits at banks. In practice this simple picture is complicated by foreign investment both in and out of New Zealand. But it is unlikely that many foreign investors could be regarded as genuine



angel investors in New Zealand given the difficulty of contributing in any practical way to a business from a distance.

According to Westpac's Household Savings Indicators¹ report, total household assets stood at around \$350bn as at the end of 2003. The majority of these assets were tied up in real estate (\$234bn) with the rest (\$117bn) in financial assets – deposits at banks, investment in the stock markets and "other". The "other" category accounts for around \$25bn and probably represents a broad measure of the stock of informal capital – it includes owners' equity in private businesses.²

If we assume the "other" category is a reasonable measure of the maximum potential size of the informal capital market then we are left with the challenge of dividing the amount up between venture capital, investment by founders, family and friends, angel capital, and other.

In their 2003 venture capital monitor Ernst & Young³ estimated that the stock of venture capital/ formal private equity in New Zealand was \$1.12bn, with \$568m available for investment (around \$550m invested). These numbers suggest that later stage private equity (including venture capital) accounts for a very small proportion of total "other" household assets.

Studies in the US⁴ and Scandinavia⁵ suggest that the angel capital market is probably about ten times the size of the venture capital market. That would imply around \$10bn of angel capital in New Zealand. But that still leaves over half of "other" household assets attributable to founders (owner equity), families and friends. The latter group also owns a considerable share of all the retained earnings (and shareholder current accounts) in New Zealand's unlisted companies – retained earnings are regarded as one of the biggest sources of equity for small businesses⁶.

Mason and Harrison (2000) estimate that informal venture (*angel*) capital investment in the UK is broadly equivalent to the amount of institutional venture capital provided to start-up and early stage ventures⁷. If the same held true for New Zealand then the informal capital market would be less

¹ Westpac, NZIER, Morningstar; Household Savings Indicators; Dec Qtr 2003.

² Although "other" assets will also include such things as endowment policies and deposits held by solicitors' trust accounts, equally, informal capital investors may well hold potential investment funds in bank deposits awaiting the appropriate opportunity to invest.

³ Ernst & Young, The NZ Venture Capital Monitor 2003

⁴ Sohl J. and Sommer B. Angel Investment Activity: funding high-tech innovations (2000)

⁵ Gullander S and Napier G. Handbook in business angel networks – The Nordic case, Stockholm School of Entrepreneurship, 2003

⁶ Ou C, Haynes G W; Uses of equity capital by small firms – findings from the National Survey of Small Business Finances; 14th annual conference on entrepreneurial finance and business ventures; April May 2003

⁷ Mason, Colin M and Harrison, Richard T (2000) "The Size of the Informal Venture Capital Market in the United Kingdom", *Small Business Economics*, vol. 15, issue 2, pages 137-148

than \$500m (by no means all of the \$550m venture capital invested is start-up or early stage). Mason and Harrison also point out that the smaller average size of investments in the informal venture capital market is reflected in the fact that eight times as many businesses raise finance from business angels than from institutional venture capital funds. As we show below New Zealand angel investors tend to do considerably more deals per annum than venture capital firms suggesting that many more businesses (probably more than 8 to 1) turn to angels than venture capitalists for equity finance.

Turning now to the flow of informal capital; the MED survey records 880 current investments by the 347 angel investor respondents. Furthermore, the survey also asked (question 4) how many businesses did the respondent invest in over the past 12 months. Although the total of 255 investments will include some double counting (different angel investors will have invested in the same deal), it can be compared to 51 venture capital deals over 2003 in New Zealand and 39 the year before⁸. The sums of capital involved per deal are likely to differ significantly. Our data indicates that the amount of angel capital invested by those investors responding to our survey was around \$26m last year (\$100,000 average deal size multiplied by 255 deals) compared to \$88m of venture capital.

Informal capital investment (friends, angels and venture capitalists) appears to represent a relatively small proportion of "other" household financial assets. Below we examine in more detail the likely size of the angel capital market.

Amount invested

Responses to the MED survey of angel investors to two questions (12 & 13) about the amount of uncommitted funds available for investing and the amount actually invested produce figures of \$87m uncommitted and \$90m currently invested. There were roughly 300 respondents to each of the questions suggesting that on average each angel investor has \$300,000 invested in businesses.

Question 6 provides some idea of the number of investments those surveyed currently have in total (we have assumed that those who indicated they had more than five current investments have on average 7). That gives a total number of investments of 880 by those surveyed, implying that the average size of angel investments per deal in New Zealand is around \$100,000. From our environmental scan that figure seems plausible. It also implies that those surveyed, with at least one investment, have on average 3 current investments.

Norwegian data⁹ indicate that the average amount invested per deal is US\$76,000. The same investors have on average 3.7 current investments, somewhat higher than our estimate for New Zealand. In other words, New Zealand angels invest proportionately more per deal in

⁸ Ernst & Young, The NZ Venture Capital Monitor 2003

⁹ Reitan B. Sorheim R. The informal venture capital market in Norway – investor characteristics, behaviour and preferences; a revised version of a paper presented to the Babson-Kauffman Entrepreneurship Conference; May 1999.



a smaller number of deals. Moreover, given that Norwegian per capita income is around 2.4 times higher than it is in New Zealand the total amount invested per investor, and average deal size, is significantly higher in New Zealand than Norway relative to average incomes in each country.

Inland Revenue Department data show that 11,160 people earned more than \$200,000pa in 2002 and therefore can be approached by firms seeking equity capital informally (one criteria in the Securities Amendment Act allowing firms to avoid meeting normal reporting requirements when seeking capital is if they approach people earning \$200,000 or more over two consecutive years). Not all of these people will be actual angel investors, but let us assume (simply a guess) that 65% are. That would imply around 7,300 investors – roughly three times the total number of names originally provided for the angel investor survey.

Multiplying the implied number of investors by the estimated average amount invested per angel from the survey data (\$300,000) produces a figure of around \$2bn of angel capital invested.

The GEM¹⁰ (2000) study estimated that 4.3% of New Zealand's adult population (2.97m people aged 15+) provide informal capital to firms other than their own (it includes investments by family and friends as well as angels, as defined for the purposes of this study). Furthermore, the GEM (2004) study indicates that the average amount invested per person \$23,000 per person. That implies a total amount invested of around \$3bn.

But because the figure includes investments by friends and family (likely to be a significant portion of the total amount of informal capital invested), and could also include investments made via venture capital firms, it implies the size of the genuine angel capital market is probably less than \$2bn.

Another statistic from the 2004 GEM study is that informal venture capital investment is equivalent to 3.5% of GDP implying a total of around \$4.7bn. This figure excludes "classic" venture capital but still includes investment by friends and family, so again is an overestimate of the angel capital market. The data suggest that the informal capital market in New Zealand is more than 10 times the formal venture capital market, whereas in Australia (presumably using the same methodology) the informal capital market is only 23% bigger than the formal venture capital market.

The general sense from the above analysis is that the angel capital market (in terms of what is currently invested) is probably around \$1bn. In other words it is around twice the size of the venture capital market (invested), but probably significantly smaller than the followers, friends and family capital market.

Number of investors and level of activity

The number of angel investors seems to lie somewhere between 1,000 and 20,000. The lower figure is based on the size of the survey sample and the proportion of those meeting the definition of being an angel

¹⁰ Global Entrepreneurship Monitor, 2000

investor. The upper limit of 20,000 is based on the assumption that 15% of GEM's estimated 128,000 (4.3% of the adult population) informal investors are genuine angel investors (the total includes friends and family investors as well as venture capital investors).

Data from Statistics New Zealand indicate that 3% of couples have combined income of more than \$200,000 – that translates into around 20,000 households, and possibly individuals, that might meet the income criteria (see appendix II) to be approached by firms seeking informal capital, and thus be regarded as potential angel investors.

We are inclined to favour a figure nearer the upper, rather than the lower end of the range, on the basis that there will be a significant number of people earning more than \$100,000 (58,680 at the 2001 census) who have angel-type investments without considering themselves angel investors.

If the definition of an angel investor is confined to those who actively contribute to the development of the business they invest in then the angel investor population could as low as 2,000 and some experienced market participants put it at less than 1,000 individuals. From the environmental scan we would put the number of genuinely active or full-time (active-astute, see below) angel investors in New Zealand at less than 100.

An interesting point picked up in the 2004 GEM study is that a high proportion (58%) of New Zealand's informal investors is female. That contradicts evidence from overseas and the MED survey, which found that around 5% of respondents, who could be defined as angel investors for the purposes of this study, were female. Our view is that the GEM results are not an accurate reflection of the gender mix of angel investors in New Zealand.

No. investments last year

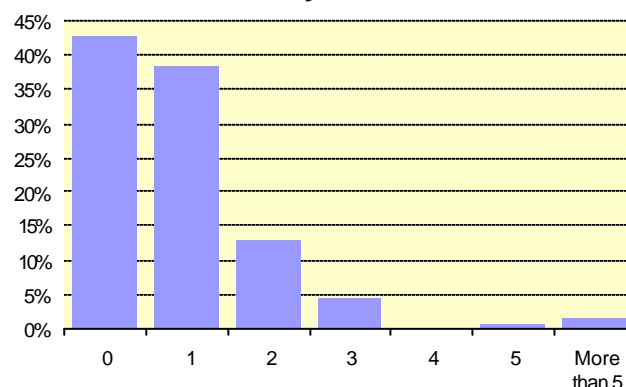


Figure 2

We calculated above that over the last 12 months those angel investors surveyed by MED had made 255 investments (question 4, assuming those that made 5 or more had, on average, made 7). Most had made none or only one investment over the past year (see figure 2). However,

there was a small group (six investors, just over 2%) who had made five or more investments in the last 12 months).

Nearly a quarter of angel investors have four or more investments according to the responses to question 6 of the MED survey. Figure 3 shows that a quarter have only one current investment, and 15% currently have no active investments.

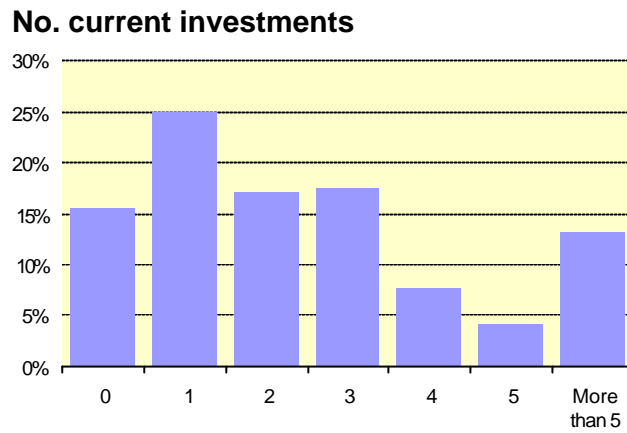


Figure 3

3. HOW THE MARKET WORKS

The analysis that follows focuses on the supply side of the angel capital market. We are interested in what motivates people to help young companies get established, how they go about identifying the appropriate companies to back, how they enter and exit those investments and what expectations they have.

This section also examines some important developments in the angel capital market in New Zealand and key issues facing suppliers of capital and expertise to young companies.

Motivations

What motivates people to become angel investors, to provide capital to help transform people's ideas into sustainable businesses?

The over-riding consideration for angel investors is to get adequately rewarded financially for the risks they take in investing in early stage businesses. In the majority of cases that reward will be in the form of an increase in the capital value of their investment rather than an ongoing cash yield. It follows that there must be a prospect of them exiting the investment in a manner that allows them to realise a capital gain.

There are at least four other possible factors underpinning people's willingness to invest in start-up businesses:

- *Wealth or high disposable income* enables and encourages individuals to allocate some of their investment funds to high risk ventures
- *An appetite for risk and adventure* encourages some people without significant wealth or income to invest in new ventures
- *Extensive business or technical experience* that can be applied to add value across more than one company
- *Altruism* persuades some people to become angel investors

The more altruistic an investor, the less weight they are likely to give to financial returns over and above the return of their capital. In contrast, risk-takers may be more focused on substantial returns rather than maintaining their capital. "Lotto-type" investors (see below for a more detailed discussion of angel types), for example, are likely to take the view that their initial investment will either be worth nothing or a very great deal – they are not looking for average returns.

The MED survey asked early-stage investors what the main reasons behind their investment were. The overwhelming reason (89%) for investing is for financial gain; implying around 10% of investors are not motivated primarily by returns. Around half of all respondents indicated that less tangible factors also inspired their investment in young businesses (see Figure 4).



Main reasons for investing

	Share	Number
Financial return	88.8%	285
To use your skills and experience	49.5%	159
For the challenge of building a business	47.7%	153
As a hobby	7.5%	24
Other	8.7%	28

Respondents were asked to mark all that apply

Figure 4

Survey respondents indicated “other” reasons for investing. Again the reasons were predominantly social, or philanthropic including assisting others to grow (“because NZ needs business growth”; “see others succeed”); regional economic development; and fun (“fun – no corporate structure/games”). Other reasons included:

- control – a desire to have a more direct influence over their investment;
- portfolio diversification; and
- professional development and networking.

How they invest

How do potential angel investors go about identifying companies to invest in? A high proportion of angel investors work on their own – 58% do their own identification and 37% invest alone. However, the majority tend to identify investment opportunities from a range of sources: family and friends, brokers and professional services firms, and referrals from business contacts. Only around a fifth of survey respondents indicated that business angel networks and investment clubs provided them with deal flow suggesting that the networks that exist have limited reach (see below for more detailed discussion of networks).

How do you become aware of investment opportunities?

Referrals from friends and family	41%	130
Referrals from investment brokers, financial services firms	50%	159
Referrals from other business contacts	65%	207
Through formal investment clubs and networks (e.g. Mine)	21%	68
Firms approach me with requests for investment	28%	90
I identify my own investment opportunities	58%	184
Other please specify	5%	16
Total Respondents		319

Respondents were asked to mark all that apply

Figure 5

Over half the survey respondents indicated that they spent half a day or less per month searching for investment opportunities, and roughly the same proportion spent less than half a day evaluating those opportunities. However, there is significant number of angel investors (about 15% of survey respondents) that dedicate more than four days a month to searching and evaluating opportunities.

Syndicates

Although the MED survey indicates that a significant proportion of angels (37%) invest alone, the majority appear to have a mixture of independent investments and ones completed via syndicates or groups. A fifth of angel investors operate exclusively through syndicates or groups (see question 20 of the survey). The latter is confirmed by question 24, which asked if investors were a member of a syndicated group for investment purposes. Again roughly 20% responded positively.

The incidence of syndication is much higher in Denmark with two thirds of angels co-investing in Denmark, and a higher proportion again in the US¹¹.

Evidence from our interviews with stakeholders in the angel capital market suggests that a significant number of investors act in conjunction with others. Formal and informal networks are common, though not necessarily particularly visible.

Networks

In Europe and America networking of business angels appears to be much more established than is the case in New Zealand. Formal business angel networks (BANs) and angel investment clubs (AICs) are both more common and conspicuous, and in some cases are assisted by central and local government organisations¹².

The limited number of BANs in New Zealand reflects two things:

- Firstly, the private, low-key and unstructured nature of such networks in New Zealand means they are difficult to identify, but are not necessarily absent.
- Secondly, business angel networks tend to become more common as the angel capital market matures – the New Zealand market is probably still relatively young by comparison to the situation in many other developed economies.

The fact that the MED was able to gather over 2,000 names of early-stage investors for its survey from regional Economic Development Agencies (EDAs), as well as IGrow, MINE and others confirms the existence of angel networks. However, the impression from interviewing those active in the market is that while there are a number of networks most are casual and relatively inactive. The number of formal networks (specific framework of processes and well-defined membership) could be as low as 20 ranging from those hosted in association with individual EDAs (Aoraki Development Trust); incubators (IceAngels); legal/accounting practices; to individual active-astute investors (IGrow, Renouff Corporation, Sparkbox).

Networking amongst angel investors could be thought of as one aspect of the type of collaboration/business networking the government is looking

¹¹ The Danish Investment Fund, Business Angels in Denmark, 2002, see www.eban.org

¹² Gullander S. Napier G. Handbook in business angel networks – The Nordic case; Stockholm School of Entrepreneurship; 2003



to foster amongst firms as a means of enhancing business performance. Analysis of inter-firm collaboration¹³ suggests that a number of conditions are important to securing the benefits potentially available from networking. To a large degree these conditions are applicable to effective networking amongst business angels:

- a champion to drive the process;
- a social network that underpins investor collaboration;
- the presence of an extensive knowledge base that if shared raises the benefits to all;
- specific infrastructure that attracts investors;
- scale – as the number and size of deals increases there are greater opportunities for specialisation and co-operation, and hence a strong incentive to work with other investors and indeed other networks.

In many cases time is required for these conditions to develop and enhance the effectiveness of individual networks and the market as a whole. This is particularly relevant to the last condition.

Although New Zealand's early-stage capital market appears to be under-networked by comparison with other countries, the process of developing networks is underway. Governments in Europe have taken steps to accelerate the development of business angel networks implying that it can be done (see www.dban.dk for details of the Danish government's initiatives to encourage the establishment of BANs).

Whether and how the government could intervene to encourage angel networks in New Zealand is a substantial topic for investigation. We address it to some degree in the final section of this report, but at this point we simply note that there is no single recipe for networking and that participants who will be responsible for sustaining networks are probably best placed to decide the nature of the networks that suit them. There are already a number of models in New Zealand that are quite different from each other, including, amongst EDAs.

MINE is a reasonably well-established model for networking angel investors, but has not been highly active. The model could be adopted and adapted by regional or industry specialist investing groups to help establish more, and more effective, BANs. The ICEHOUSE's angel investment club could be a model for other groups around New Zealand. While attached to an incubator the ICEHOUSE's network has also seen external deal flow. The fact is, the more BAN models or recipes there are the more likely the market will develop an appropriate range of networks that will meet the needs of investors and young companies searching for funds.

¹³ Colin Campbell-Hunt et al; Collaboration and Linkages between SMEs in New Zealand, MED; June 2004

Selection criteria

An important part of the process of investing in start-up or early-stage businesses is the investment selection criteria used.

At what stage of the business development process do investors want to invest and, at what stage do they invest in practice? Responses from the survey indicate that most prefer to invest at the start-up and early expansion stage. Around a quarter have no particular preference, perhaps indicating that other factors are more important than the stage at which they invest in a company. In practice, a much higher proportion of investment occurs at the seed stage than is indicated by those expressing a particular preference.

	Actual	Preference
No preference		25.9%
Seed	38.7%	17.7%
Start-up	57.7%	40.1%
Early expansion	47.0%	43.8%
Expansion	30.5%	30.0%

Respondents were asked to mark all that apply

Figure 6

Generally investors will want to be satisfied about two fundamental aspects of the business they are looking to become involved with:

- The character, attitude and competence of the entrepreneur and his or her management team; and
- The business case – the competitive advantage of the product/ idea.

From question 21 of the MED survey it is clear that investors place a great deal of weight on the quality, personality and attitude of the owner and management team, as well as the competitive advantage or point of difference in a commercial sense the entrepreneur’s idea possesses. More weight was given to the international potential of the product than the domestic market potential, implying that most investors were looking for the business to be competitive internationally either to ensure growth or to appeal to a much larger pool of future investors.

	Importance*	
	low	high
Quality of management	2%	88%
Personality, attitude of owner	1%	83%
Domestic market potential	16%	38%
International market potential	17%	53%
Competitive advantage	1%	86%
Physical location	42%	17%
Consistency with investment preferences	16%	47%
Regulatory burden in industry	18%	35%
Quality of business plan	9%	60%
Consistency with experience, expertise	10%	48%

** not important, very important*

Figure 7



The most common reason for rejecting a potential investment opportunity was excessive risk. Question 5 of the survey asked angel investors what were the main reasons for not investing in businesses they had looked at. Almost half (49%) said when the risk was too high. Other reasons for not investing included: the business did not fit investment preferences (40%); the business plan was not acceptable (37%) and the management team lacked expertise or experience (36%).

Regional

International studies of the angel capital market suggest that investment is strongly regional and/or industry oriented. Although the interviews with angel investors supported the international tendency to invest in local businesses (within roughly 100km), over 40% of respondents rated physical location as not particularly important (see Figure 7). The latter perhaps reflects the size of the New Zealand economy and the lack of depth regionally in particular sectors. However, it may also reflect the small geographic size of New Zealand (you can get almost anywhere in 2 hours from an urban location) or the fact that industry is relatively concentrated geographically.

The logic behind a regional focus revolves around:

- a desire to give back to their local community
- investors are most likely to discover investment opportunities from local contacts
- the need to have close contact with the emerging business either as a board member or a more hands-on manager means the business is ideally within one or two hours by car from where the investor lives;
- the benefits of community contacts/relationships in building a clear understanding of the business founder's character (very important to deciding whether or not to go ahead with an investment);
- can help reduce transaction costs;
- and in small communities can impose a reputational discipline on the entrepreneur that might provide some added security to the investment.

In New Zealand, local economic development agencies (EDAs) are playing an active role in stimulating or leading local angel capital networks – some EDAs much more than others. Most EDAs hold a Securities Act Exemption Notice which enable businesses to list their investment opportunities via EDA publications without having to comply with all the requirements of the Securities Act. That encourages businesses and investors to operate through their local EDAs.

There appear to be important differences between how the early-stage capital market operates across the regions. In the smaller centres the market tends to be focused around one or two individuals who have the money, acumen and respect to lead other wealthy individuals into early-stage investments. In larger communities a number of individuals and organisations will be active providing depth and diversity to this part of the private capital market.

Although some people interviewed as part of this study thought that the South Island markets were driven more by groups of wealthy people from the same social circle (old boy networks) as opposed to the more individual entrepreneurial style in Auckland, the differences may well be more about perception than substance. Similar social groups exist in Wellington and Auckland, but bigger markets will be more diverse suggesting a different overall character.

Industry

Angel investment is often regarded as particularly important in nurturing the growth of so-called new-economy businesses (information technology, design intensive businesses). Technology companies certainly account for a high proportion of the businesses that angels invest in (around 60% have one or more investments in technology businesses according to responses to question 9 of the MED survey).

In other countries sector specific angel networks are relatively common probably because the number of start-up firms in any particular industry and region is far greater than is the case in New Zealand. Software, telecommunications and biotechnology are amongst the higher profile networks in other countries reflecting the greater likelihood that companies in such activities will require outside equity and business skills to commercialise ideas quickly – speed-to-market is critical to such ventures.

UK, Swedish and Norwegian studies¹⁴, however, indicate that hi-tech businesses are not the only ones targeted by angel investors: retail trade, consumer services, finance, manufacturing, and real estate all feature as potential investment areas.

In New Zealand investments in manufacturing and agriculture account for just under a third of most angel investors' portfolios. The question in the survey relating to industry allocation of investments provided respondents with a very broad selection of industries, which for many did not allow them to properly indicate where they were investing (27% answered "other").

¹⁴ Mason C. Harrison R. A strategy for closing the small firms' finance gap; Venture Finance Research Project; working paper no 3; 1991. Landstrom H. Informal risk capital in Sweden and some international comparisons; Journal of Business venturing; 1993. Reitan B, Sorheim R; 1999; op cit



Industries invested in

Manufacturing	30.9%
Agriculture, Forestry and Fishing	28.1%
Other (please specify)	27.3%
Communication	23.4%
Property and Business Services	22.3%
Finance and Insurance	17.6%
Wholesale and Retail Trade	12.9%
Health, Personal and Other Services	12.6%
Electricity, Gas and Water	6.8%
Construction	6.8%
Education Services	5.4%
Accommodation, Bars and Restaurants	5.0%
Mining	4.0%
Transport and Storage	3.6%

Respondents were asked to mark all that apply

Figure 8

Those who answered “other” were asked to specify which areas they invested in. It is clear from these more detailed responses that the majority of “other” investments are in technology, IT, biotechnology, software, and electronics. By implication a significant proportion of investments in manufacturing and agriculture are probably technology related.

Angel investors surveyed were asked whether they had invested in companies spun-off from Crown Research Institutes (CRI) or that had emerged from business incubators. Less than 3% had invested in CRI-originated businesses and just over 10% had invested in incubator-related businesses. Given that incubators are a relatively recent phenomenon in New Zealand we would expect a growing proportion of angels to invest in incubated businesses over time.

Exits

The MED’s survey of angel investors suggests that 340 people currently have around 880 investments. According to survey question 26, investors have exited 466 deals in the last five years. The pool of investments from which the 466 exits have come from is probably larger than the 880 current investments given that the average age of investments is probably between four and seven years.

Mason and Harrison¹⁵ argue that the average life of profitable angel investments in the UK is four years, two years for unprofitable investments, and six years for “living-dead” investments.

As Figure 9 shows, more than a third of investors have not exited any investments in five years and another quarter indicate they have exited only one investment. At the other extreme more than one in ten investors has exited four or more investments over the last five years implying a small pool of relatively active investors.

¹⁵ C Mason R Harrison; Is It Worth It? The Rates of Return from Informal Venture Capital Investments; Journal of Business Venturing, 17, 211-136

Number of exits (last 5 years)

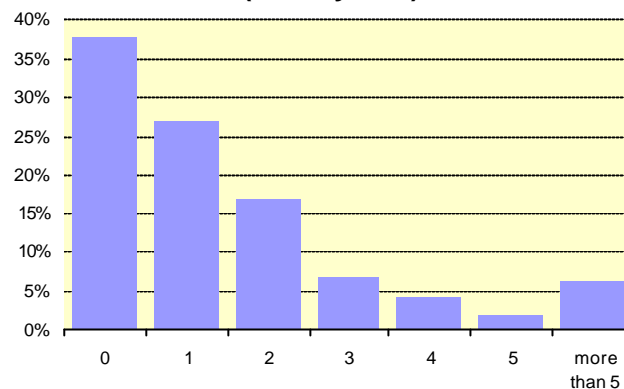


Figure 9

Return on exited investments

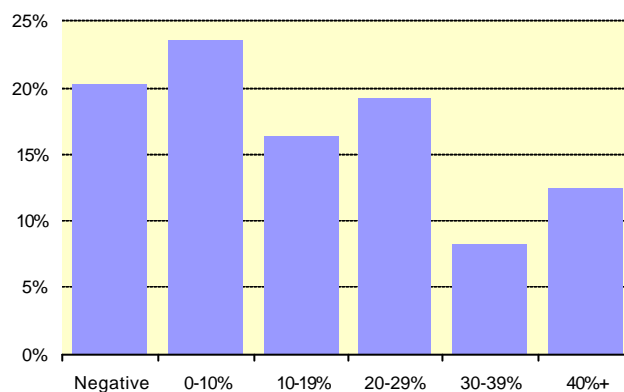


Figure 10

Interestingly, around a fifth of exited investments in New Zealand have generated returns greater than 30%pa according to the survey responses. We would be cautious about interpreting the survey responses on returns too literally. In some cases several funding rounds may have been required and considerable unpaid time will have been invested. Nonetheless, the results are roughly in line with what most angel and private equity investors would be looking for – one to two “gushers” out of every ten investments.

Almost one in 10 investors don't know what return they made on their exited investments, and another 18% lost some or all of their investment. Many more investors realised low returns (0-10%pa) than were expecting them. That was an experience that came through from those investing in start-up and early-stage companies.



Returns		
	target	actual
negative		18.1%
0-10%pa	7.5%	21.6%
10-20%pa	32.7%	15.1%
20-30%pa	37.1%	17.6%
30-40%pa	9.7%	7.5%
>40%pa	5.3%	11.6%
<i>don't know</i>	7.8%	8.5%

Figure 11

From our interviews there did not appear to be a significant number of angel-backed companies going on to attract venture capital. There appear to be at least two reasons for this lack of transition:

- generally venture capital companies are not interested in providing an exit for existing investors; and
- angel-backed companies often remain too high a risk for venture capital investors.

Exit method

Business acquisition or merger	26.3%
Initial public offering (sell-down on public market)	10.8%
Sale of ownership stake to existing owners	39.2%
Sale of ownership stake to one or more third parties	42.3%
Business ceased operations	28.4%
Business was liquidated	13.9%
Other (please specify)	2.6%

Respondents were asked to mark all that apply

Figure 12

A significant proportion (around 40%) of all exits are involuntary – the business either ceases operations or is liquidated. That is consistent with recorded returns from the survey with around 45% of realised returns being less than 10%pa. UK data¹⁶ suggest that 40% of informal capital investments are written off as a loss, and one in five produce returns of 50% or more.

Around 40% of angel investors exit by selling out to existing shareholders or to other private investors (possibly venture capitalists). Just one in ten angel investors exit via a public listing, which is not surprising given their focus is on establishing the business rather than later stage growth. Around a quarter of exits are achieved via a trade sale.

Angel investor characteristics

Analyses of the angel capital market in Europe and North America generally conclude that the archetypal angel investor is a high net worth individual who provides risk capital and expertise to one or more start-up companies. Angel investors are almost invariably male, generally aged between 35 and 55 and more often than not invest in businesses close to

¹⁶ Ibid

where they live and in industries with which they are familiar. While financial return is an important motive, angel investors are also driven by non-financial factors such as a desire to contribute and a wish to reinvest or leverage their expertise.

The MED's survey provides some empirical evidence confirming that the above general description of angel investors also holds true for New Zealand. The information outlined in the graphs below relates to those who responded to the survey, and who invested in companies where there was no prior relationship with the owner (i.e. it excludes those investing in businesses owned by family members or friends).

Age Distribution

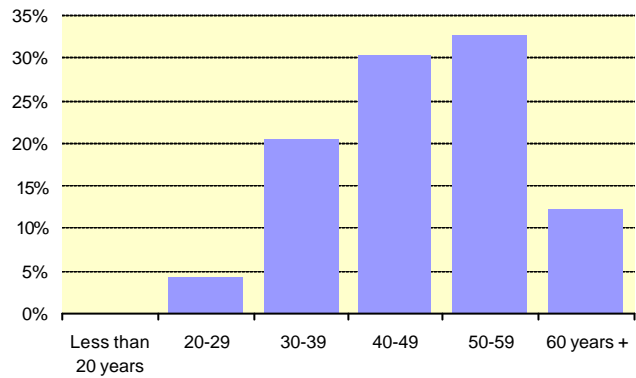


Figure 13

Wealth Distribution

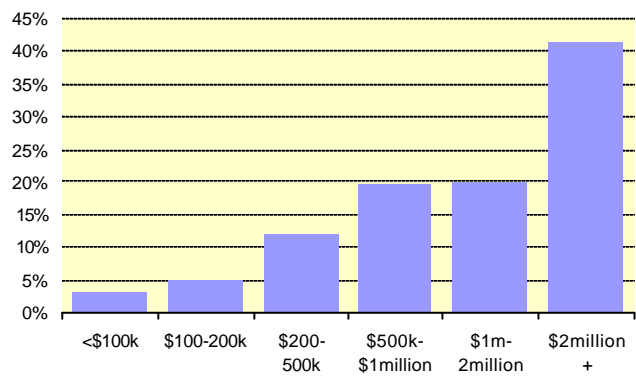


Figure 14



Income Distribution

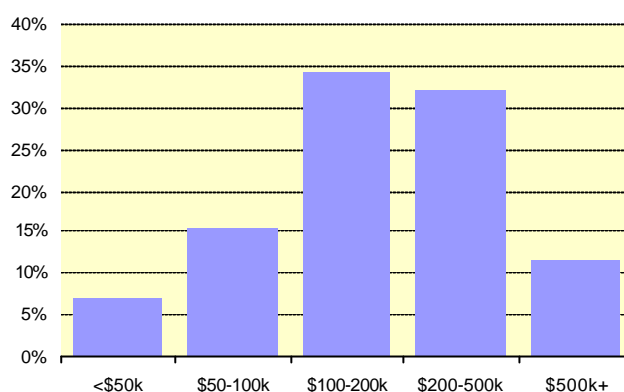


Figure 15

Angel investors from the survey fit the archetypal definition of an angel investor: aged between 35 and 55, high net worth (\$2m+) and high incomes.

We noted above that, consistent with overseas results and according to the MED survey, only 5% of New Zealand angel investors are female. The MED survey also indicated that around 85% of angel investors are European/Pakeha. Asians accounted for just under 4% of investors and more than 8% did not specify an ethnic group.

The survey also shows that 82% of angel investors have founded and run their own business and around half (47%) of these had received angel capital (from people other than friends and families). In other words, a large number of angel investors have been on the “other side of the fence” and therefore can appreciate some of the tensions and difficulties that can arise.

Angel types

There is a considerable body of research that has focused on categorising angel investors as a means of better understanding the supply side of the market – what drives it, and who the important players are. The research highlights two important characteristics of the angel capital market: it is difficult to define, and there is no such thing as a typical angel investor – it is a very heterogeneous market.

Nonetheless, numerous studies have attempted to define categories of angel investors, in some cases in such numbers as to defeat the usefulness of categorisation. Although grouping investors into a small number of categories runs the risk of over-simplifying the types of angel investors that exist in the market, it delivers a clearer picture of the main groups and their characteristics.

A study¹⁷ of the Norwegian angel capital market used cluster analysis to identify four main groups of angel investors:

¹⁷ Sorheim R and Landstrom H; Informal Investors in Norway – A Categorization and Policy Implications; Babson College-Kauffman Foundation Entrepreneurship Research Conference, June 2000

- Lotto investors (gamble with a small amount invested with the possibility of high returns)
- Traders (high activity, low competence)
- Competent investors (good analytical skills, cautious, low activity)
- Business angels (often lead investors, engage directly with target companies, multiple investments, relatively long time horizons)

A recent US study¹⁸ also had four categories of angel investors based on interviews with 26 angel investors, 12 angel groups and 15 related professional service firms. The following categorisation is based on the experience of angel investors along two axes – relevant industry experience and relevant entrepreneurial experience:

- Guardian angels (considerable technical and managerial skills that are actively applied to the start-up business)
- Professional entrepreneur angels (investing outside their area of expertise and tend to invest alongside guardian angels they trust and respect)
- Operational expertise angels (experienced executive in target company's industry, brought in to help other angel investors with due diligence and direct involvement with the firm)
- Financial return angels (rich individuals with capital but no particular technical or business experience to offer start-up businesses, and therefore looking for a return rather than involvement in the company)

The above two attempts to categorise angel investors highlight the sponginess of any particular set of descriptions, but they identify some of the dimensions along which it might be useful to categorise investors. The definitions are likely to vary between countries and possibly also by the maturity and size of individual capital markets. However, there are some approximate match-ups between the two studies groupings:

Lotto investors	–	financial return angels
Traders	–	professional entrepreneur angels
Competent	–	operational expertise angels
Business angels	–	guardian angels

In the absence of a detailed study of angel investor types, but drawing on interviews with people with a good overview of the angel capital market in New Zealand, we suggest there are three broad groups of angel investors:

Passive-dabblers	–	the first two groups
Angel investors	–	the last two groups above
Active-astute	–	again, the last two groups above

¹⁸ Linde L and Prasad A; Venture Support Systems Project: Angel Investors; MIT Entrepreneur Center; Release 1.1; February 2000.



The three groups identify themselves largely by their degree of involvement, but also their experience, either as an entrepreneur or as an investor in the seed/start-up end of the private equity market. The following categorisation has been informed by the interviews carried out as part of the environmental scan as well as extensive filtering¹⁹ of the survey results. The econometric analysis (including principal components analysis) reported on below is detailed in Appendix IV.

Passive-dabblers

Passive dabblers tend to have fewer informal investments than angels as a whole and such investments are likely to represent a small proportion (probably less than 5%) of their investment portfolio excluding property. The great majority of these investors would not regard themselves as angel investors, and may not even be aware of the concept.

Passive-dabblers are likely to have a higher appetite for risk than more active angel investors. They will be prepared to invest without a detailed knowledge of the business, relying instead on the reputation of other investors, and in some cases may even invest on “tips” (or punts) from business colleagues. They are more likely to be young to middle aged, rather than old – they are better placed to recover losses incurred in investing in high risk ventures. They are relatively casual investors, relying on the word or judgement of others rather than their own detailed analysis.

This group of investors is characterised more by high incomes than by high net worth, reflecting the fact that younger people are generally still accumulating their wealth. It will include professionals – lawyers, dentists, doctors, company executives, accountants, etc – who generate high earned incomes, but are generally fully committed to their careers/practices and therefore have little time to rigorously analyse individual investments.

Although many passive dabblers will act on their own, the majority of investments they make are likely to be alongside others with a more detailed knowledge of the investment (either through personal contacts, through their professional involvement with the business or via accounting/legal firms).

Passive-dabblers probably account for a relatively small proportion of those covered by the MED survey because, almost by definition, they would not elect to join investor networks. However, if we consider that the broad population of angel investors is possibly as high as 20,000, then the majority of them would be passive dabblers.

Angel investors

The archetypal angel – high net worth individual, more often than not a person who has founded, run and sold their own business, or who has extensive senior executive experience and is keen to continue applying their skills in a slightly less hands-on role. They will tend to be amongst the older private equity investors (most often retired or semi-retired) and in addition to capital will typically contribute knowledge, experience,

¹⁹ The questions used in determining the categories included: Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q23, Q24, Q26, Q27, Q30, Q31, Q35, Q36

contacts and judgement. They normally become a director of the business(es) they invest in.

They will more often than not act alone and be motivated by a desire to coach/mentor young entrepreneurs rather than simply to maximise the return from their investment. In some cases they will be attracted by the entrepreneur's idea and will want to help turn it into a reality. In these senses they are more likely to be focussed on the success of the business rather than their share of the spoils.

In contrast to the passive-dabblers, angel investors undertake a more thorough analysis of the idea, company and person before they invest. They are more likely to restrict their investments to local businesses, though some will invest in companies within easy reach of where they live (a direct air connection or up to a two hour car journey). As a result of this more rigorous approach to investing they are likely to achieve higher returns than passive dabblers.

Active-astute

There is a small group of early stage private equity investors who are active and professional. They dedicate most of their working hours to identifying potential investments, preparing the ground to invest, and often allocate a significant amount of time to developing the businesses they invest in.

They take a more hands-on approach than angel investors and therefore have a much better understanding of the risks they are taking and look to actively manage those risks. They will tend to have capital invested in a number of businesses (certainly more on average than the other two groups) and therefore be using a portfolio approach to help reduce their risk.

These private equity investors will generally be the conduit through which a lot of passive early-stage funding flows. In a sense these individuals could be thought of as one-man venture capital companies. They follow the same disciplined approach to investing, including a comprehensive investment document setting out an extensive list of conditions and agreements. In other words the initial transaction costs are relatively high.

They are often the "lead investors" referred to in other countries. For example in Norway 40% of investors over a three year period made their investments following the initiative of a "lead investor"²⁰.

The following provides some of the key characteristics of an active-astute investor operating in the New Zealand market. Although there are dangers in setting out characteristics based on interviews with just two or three active investors (the temptation is to generalise), we believe the details provide some useful specific information about active-astute angel investors.

²⁰ Reitan B. Sorheim R. The informal venture capital market in Norway – investor characteristics, behaviour and preferences; a revised version of a paper presented to the Babson-Kauffman Entrepreneurship Conference; May 1999.



- An active-astute investor**
- Focused almost solely on returns – aim for 25%pa
 - Size of individual investment ranges from \$25,000 to \$250,000
 - Look for start-up businesses or turnaround opportunities with:
 - Recurring revenue
 - High barriers to entry
 - Small, niche markets (big guys not interested)
 - Excludes particular sectors rather than focusing on specific sectors
 - Invests only within local region
 - Meets with investee companies at least once a month
 - Always a director of the company and sometimes a manager temporarily
 - Has access to a pool of investors that can be tapped into for individual investments

The investor groups identified above can be used to present a more detailed picture of the early-stage investment market in New Zealand:

Characteristics of early-stage investor categories

	Possible share of market#		Estimated average returns*	Motivation
	by number	by capital		
Passive dabblers	75%	45%	13.3%	fun, ego
Angels	20%	25%	16.9%	philanthropy
Active astute	5%	30%	21.3%	returns

Infometrics numbers

* From MED survey

Figure 16

Data from a study²¹ of around 600 Norwegian informal venture capital investors show that the majority of investors are passive (in 65% of all investments the investors behave as they would if investing in a publicly listed company). The same report suggests that in the UK, US and Sweden 70-90% of investors play a relatively active role in their investee companies.

Econometric analysis

Using MED survey data, we applied econometric techniques in an attempt to isolate the separate influences of various underlying factors on investment exits and returns.

While we should not ignore the possibility that there is some bias in the response rate owing to the sample selection method, the number of

²¹ Ibid

responses to any given question suggests that we can be reasonably confident that the answers are representative. However, cross-tabulations of more than one question at a time are likely to contain much wider error margins, depending on the number of responses to each of the tabulated questions. This needs to be borne in mind when reading the analysis described below.

Simple statistical descriptions provide a useful overview of the characteristics of angel investors; their methods, preferences, opinions and so on. From these descriptions it is always tempting to draw inferences about links between variables and possible causative influences. For example, we may observe that most successful angel investments are by investors of high net worth and simultaneously that most successful angel investments are in manufacturing. Which of these has the stronger effect on returns and to what extent might wealth be a proxy for experience, via the effect of age?

The econometric analysis undertaken cannot tell us anything about causation. It may reveal where the true correlations exist (if the models are correctly specified), but we must rely on theory and reasoning to explain why such relationships might exist.

The econometric analysis of the survey data is described in detail in Appendix IV. The analysis entails an examination of the factors that contribute to successful angel investment, using multiple regression; and principal components analysis of investment criteria and market perceptions. In each case three groups were identified: all angel investors, passive investors and active/astute investors. In effect, we viewed angel investors as being segmented along a continuum of involvement from passive to active.

With the survey having so many questions it was originally our intention to undertake some form of factor analysis or principal components analysis on the whole dataset, in order to establish whether responses exhibited any form of clustering around certain attitudes or investor behaviour. Unfortunately the survey response dataset does not support this type of analysis. There are too many different types of questions for distillation into one or even a few dominant signals without some guidance from theory or other empirical research.

Instead, we chose two approaches for the analysis of the dataset. Firstly we defined two specific questions that seek to determine what factors contribute to a successful angel investment:

- What factors are associated with a successful exit (using the responses to Question 28 to define the dependent variable as the net number of successful exits)?
- What factors are associated with a high rate of return at exit (using the mid-points of the response options for Question 27 as the dependent variable)?

These questions are explored using multiple linear regression with a “general to specific” methodology. Sample size restrictions have forced us to omit industry type as an explanatory variable.



Secondly, in an attempt to return to the idea of a typical angel investor, we analyse two questions that ask investors about their opinions on a range of issues. Principal components analysis is used for this task. The two questions are 29, which asks about the angel investment market environment, and 21, which asks about angel investment criteria.

Results

Based on the discussion in the previous section we examine the above questions for three different groups of investors:

1. All angel investors – those who answered ‘yes’ to Question 1.
2. Passive investors – those who reported ‘no other roles’ under Question 23.
3. Active/astute investors – those who reported ‘board member’ under Question 23 AND reported net household wealth above \$2m under Question 36.

The regression analysis suggests that passive investors are a mixed group, with successful investors comprising both hobbyists and those desiring the challenge of building a business; those who secure their opportunities through business contacts and those who secure them from friends and family. They place more importance on evaluating proposals, than searching for opportunities.

Successful astute/active angel investors prefer to invest at the expansion stage and in businesses that are consistent with their own expertise and experience. Referrals from family and friends has a positive effect; the group may be astute, but this does not mean that they shun informal networks. Astute investors also attach importance to research and to achieving a financial return.

In relation to investment criteria and perceptions about the angel investment market, principal components analysis reveals a high degree of uniformity amongst angel investors as a whole, but rather less when investors are categorised as passive or astute.

While passive and astute investors are different in some key respects, (such as reasons for investing) it would seem that investment criteria and market perceptions are not amongst the main differentiating factors.

Detailed results are set out in Appendix IV.

Significant developments and market issues

The angel capital market is maturing as investors gain experience, a market profile is established, and there is a better understanding of the market and the context within which it operates – this study is a contribution to the latter. The following sections outline some of the key developments.

Market evolution

Markets typically evolve in response to experience, outside influences and the demonstration of different strategies, with successful (unsuccessful) ones being identified and adopted (dropped) by market

participants. New Zealand's early-stage capital market is evolving – the following comments from at least two experienced stakeholders highlight what they see as important developments:

- The capital market at each stage (seed, early-stage, expansion) is more sophisticated (rigorous, organised and experienced) than it was five years ago. That partly reflects the establishment of the government's venture investment fund (VIF) with quite formal criteria, but also the emergence of active business angel networks. For example, the ICEHOUSE's recently established angel investment club (ICE Angels) has clear investment process and membership rules.
- The angel capital market's profile is growing, with more deals being reported in the media and angel investors such as Stephen Tindall, Sparkbox and IGrow receiving publicity. More articles are appearing in business magazines highlighting the angel capital market and web searches on the subject are likely to bring up more New Zealand references to the angel capital market than would have been the case five years ago.
- There is a better understanding of how to make money out of new ideas – professional services firms have accumulated more experience of businesses trying to commercialise ideas and that knowledge is available to potential angel investors. Over time investors will be expanding their own understanding of how to commercialise ideas and manage companies through their formative years.
- More professional investors are participating in the market and that is bringing more rigor to the investment process. The fact that returns have generally failed to meet expectations has been an important incentive for some angel investors to be more rigorous about how they go about investing, who they invest with and what type of businesses they invest in.

The government's Investment Ready Scheme, now the Escalator scheme, as well as numerous studies looking at firms' access to capital have helped build a better understanding of the angel capital market. The more analysis and information there is about the market the easier it is for people to identify and participate in the market, and the better informed existing players can be. Part of the intention of the current study, and especially the MED survey of angel investors, is to expand market knowledge for the benefit of policy makers and market participants.

More investor groups, syndicates, networks and investment clubs are emerging, which enhances the flow of information and knowledge about the market. Whether the rate of growth in this important component of the capital market is too slow because of specific market failures, or is proceeding at pace consistent with logical market evolution is unclear. We suspect that the evolution of networks has more of a geometric than a linear development curve – the pace of growth will accelerate over time as more examples of successful networks establish a track record.

From interviews with those active in the angel capital market, the general consensus was that investments take longer than expected to complete (entry to exit). The time taken appears to range between three to five years and it is not uncommon for the investment cycle to be around seven years.



Although the survey indicates 466 exits over the last five years by those surveyed, it is not clear from what sized pool of investments they come (we know that respondents had 880 current investments). In light of experience in the venture capital market it would be surprising if the angel capital market has established a firm track record of performance. On the basis of the 466 exits noted by the MED survey, the estimated average return in the angel capital market is 16.9%pa.

The widespread decline in the value of technology-intensive businesses between 2000 and 2003 made conditions difficult for many investors in early-stage (and later stage) hi-tech businesses. The slump in capital spending on hi-tech equipment internationally during this period has made the task of commercialising new concepts more difficult, adding significantly to the capital investment demands for new companies.

Laws and Regulations

There are three areas of legislation/regulation that have a direct bearing on the early-stage capital market:

- Exemption notices and security issuance laws
- Tax rules governing capital gains
- Tax rules relating to continuity of ownership to claim tax losses

In Appendix II we have set out the relevant legislation governing investment offers to the public. Recent changes to the law appear to have increased the scope for businesses to seek funding from investors without having the benefits of an exemption notice. A number of EDAs have been granted an exemption notice by the Securities Commission to permit them to handle investment offers outside the conditions of the Securities Act (1978).

Capital gains tax is a sensitive issue amongst all private equity investors. The rules determining whether or not taxation of capital gains apply to private equity investments revolves around the rather tenuous concept of intention at the time of investment, or how much investing one does. Until these rules are clarified some private equity investments remain vulnerable to a 33% across the board reduction in returns. The fact that virtually all high risk private investing is done with an implicit or explicit exit strategy suggests the intention at the time of investment is to sell at some stage in the near future (3-7 years).

One significant angel investor raised the problem of having to maintaining 49% ownership by at least one shareholder to ensure access to previous tax losses. The investor who raised this issue implied that they had had to compromise the structuring of some deals to maintain continuity of shareholding in order to secure tax losses. With young fast growing companies desperate for capital, shareholdings often have to change significantly to attract new capital. More mature companies tend to have relatively stable share registries and therefore do not generally find it difficult to use losses to offset future profits for tax purposes.

Investor education

The Escalator Service, formerly the Investment Ready Scheme, was developed because the demand side of the private equity market was believed to lack sophistication. A number of interviewees argued that a similar lack of knowledge and experience exists on the supply side of the early-stage capital market. Although there are sophisticated investors in this segment of the capital market the majority are not.

Few investors undertake rigorous analysis or seek professional advice before investing. That partly reflects the need to keep transaction costs low given the size of the sums involved. However, in many cases entrepreneurs and investors underestimate the amount of capital a business will require to support growth, and a lack of pre-investment analysis and an appropriate deal structure can create major headaches when more capital is required from original or new investors.



4. POLICY DISCUSSION

There has been little economic policy analysis specifically focussed on the angel capital market. However, much of the analysis of venture capital markets can be applied to angel capital market issues. Thus we adopt a general to specific approach in this section's discussion of policy issues relating to the angel capital market.

We begin with a discussion of the asymmetric information problem inherent in investment credit markets. We posit that the development of venture capital and angel capital markets are the logical market responses to this inherent problem. Theoretical considerations suggest that policy initiatives are likely to yield ambiguous national welfare improvements on these private sector responses. This is primarily because the generic source of the problem is a lack of specific knowledge about which entrepreneurs have ideas that will be commercially successful and no central authority will have superior knowledge to market participants. Below we:

- discuss the types of policies that potentially can influence angel and venture capital investment activity,
- present one analyst's assessment of the "optimal public policy for venture capital backed innovation" (Keuschnigg 2003), and
- present the economic consequences of second-best policies.

This is followed by a discussion of the types of policies adopted by other countries. We finish by addressing issues directly relevant to angel capitalists. The key message here is that innovation-based business growth will be best served by generic policies that remove regulatory and tax distortions to capital allocation decisions. With respect to policies aimed directly at the angel capital market, the government may have a limited role in encouraging sophistication of angel investors and market infrastructure. Potential policies include:

- Financial education for potential angel capitalists
- Profile raising of the angel investment market
- Supporting the development of angel investor networks

The problem with credit markets

Market systems provide a highly efficient method of allocating and distributing resources. However, they are more likely to yield efficient results when participants have full information about the market and a market premium is likely to exist for those who can obtain and make good use of new information. This is the market premium that accrues to people or firms that can exploit the advantages of new innovations. They have a new product or new production method that gives them an advantage over their competitors.

Knowledge and technological advances have always been the key to economic advances. However, markets facilitate the quick spread of knowledge which quickly erodes the value of the innovation to the innovator. This creates a natural tension between creating returns and

incentives for developing new technology. The pace of technological advance is thus all about timing. If competitive forces are overly efficient then they will erode the commercial advantages of innovators too quickly and thus remove incentives for innovative behaviour. But entrenching the returns from innovation may be equally discouraging to further advances.

The institutional regulatory response to this trade-off is the patent system. Patents allocate fixed term monopoly rights to the registered innovator. This system means that the innovator has precedence over the commercial returns that might accrue from a technological advance, but it also ensures that these rights are only available for a fixed term and that the details of the innovation are publicly available.

A patent does not guarantee that an invention will be a commercial success and this lack of certainty produces 'information asymmetry' that can make it very difficult for innovative firms, particularly new ones, to obtain finance to develop and exploit innovations commercially. There will be many people approaching banks and other financiers to obtain funds. The banks need to be able to differentiate between borrowers who will be able to service and repay their debt and those who will not (or in the extreme, choose not to). This problem is particularly intense for start-up firms that wish to develop a new technology.

Start-up firms developing new technologies commonly do not generate steady cash flows to service debts. In fact cash flows for these firms are often negative, with large sums being 'burnt' in order to develop and then commercialise the product. Thus lead times are long and the extreme uncertainty associated with developing new technologies makes it difficult to predict how much return (if any) will be generated. These factors make debt finance unsuitable, as:

- The upside returns for the lender are fixed by the rate of interest charged, and
- At very high interest rates an adverse selection problem emerges – firms that have a greater propensity to be sustainably profitable will be unwilling to take up finance that they perceive to be too expensive. This means that the firms that approach the bank are likely to be higher risk firms that have a higher potential failure rate.

The net affect is that the normal pricing mechanism available for banks (i.e. interest rates) is not very effective and banks shift into credit rationing strategies (i.e. refusing to finance high risk proposals). There are two key ways financiers can mitigate their lending risk: they can seek some form of guarantee (collateral) or they can invest time and resources into acquiring knowledge about the loan seeker. As it can be costly to acquire the necessary knowledge and not all proponents of potentially viable projects will have the required amount of collateral, there is a gap in the finance market that is not met by the banking system, particularly for technology based start-up firms.

Venture and angel capital are market responses to fill this gap and are used to finance a small minority of companies with the potential and ambition to grow rapidly. It is thought to be of disproportionate importance in stimulating innovation. Venture capital involves the supply of equity finance – so the investor shares in the benefits of high growth –



alongside 'hands-on' governance so as to assist in bringing about the success of investee companies.

The venture capital firms raise funds from private investors and invest the funds in small entrepreneurial firms. The contracts between the venture capitalist and the investee firms have complex terms reflecting agency problems inherent in the financing relationship.

Through their specialist knowledge, venture capitalists are able to add value through active monitoring, governance and operational advice, as well as financial backing. Entrepreneurs not only need money but also business contacts, strategic advice and other managerial support in building the firm. Experienced venture capitalists can offer "informal capital" by giving both money and managerial advice (Keuschnigg 2003, p3).

Information asymmetry problems will persist but practices have developed to mitigate these risks. For example, finance tends to be forwarded to the entrepreneur in stages, with subsequent rounds dependent on the entrepreneur meeting interim performance targets. This means that instead of pulling funds out of the firm (default on debt) the venture capitalist simply refuses to put more funds in (Armour 2002).

Armour (2002) also notes that venture capitalists in the US typically take preferred shares, usually convertible on demand into ordinary shares, whereas the entrepreneur takes plain ordinary shares. While it is not clear that this use of preference shares mitigates the venture capitalist's risk in any meaningful way, given the typically low value of liquid assets, it may still be useful as a signalling device to reaffirm the pecking order and relative power positions. Investment agreements usually also provide for a range of control rights to be given to the venture capitalist (e.g. enhanced voting rights).

Policy options - theory

While the presence of information asymmetries indicates market failure and market outcomes are unlikely to be either economically efficient or socially optimal, it is not obvious that policy interventions can result in an unambiguously improved outcome. This is because an absence of information on the part of potential investors lies at the heart of information asymmetry problems and it is not obvious that the government possesses any additional ability to observe this information. These situations where the market is not ideal but policy interventions only have a lottery chance of improving the outcome are referred to as Constrained Pareto Optimal Allocations, as while not ideal, the allocation is unlikely to be improved upon by a central authority (Mas-Colell et al 1995, p437).

There are two potential market responses to information asymmetries: signalling and screening. Signalling refers to activities undertaken by individuals that reliably reveal to others that one is of the desired type. While the activity contributes to making the unobservable attribute more observable, the activity itself serves no other purpose and so represents a waste of effort. Collateral is often used as a signalling mechanism.

Screening is more applicable to finance markets and occurs when the uninformed party (the financier) takes steps to distinguish or screen the

entrepreneur. Screening activities do not guarantee equilibrium. An example of failed or imperfect screening activities is credit rationing. A high rate of interest might compensate banks for the risk of default by a certain proportion of lenders, but it also dissuades another proportion of less risky lenders from applying for funds. Banks usually find it more profitable to offer loans at lower rates of interest (and thus generating an excess demand for loans) and then applying a set of rules to exclude what they deem will be the borrowers that have the highest risk of default.

A number of the borrowers refused credit by banks will have projects that, if funded, will be profitable. However, it will take more effort than banks will be willing to invest to distinguish the profitable minority from within this 'high risk' group. It is this gap in the formal finance market that creates a market opportunity for venture and angel capitalists. Effectively venture and angel capitalists are also screening prospective entrepreneurs, but they offer the type of hands-on involvement that gives them the required level of risk management.

Angel or venture capital-backed firms introduce more radical innovations and pursue more aggressive market strategies compared to other start-ups. Once a venture capitalist joins the firm and provides finance, the probability of introducing the new product jumps by a factor of three. Rapid market introduction is strategically important because the first firm enjoys a first mover advantage (Keuschnigg 2003, p4). Obtaining a venture capital partnership may also represent a signalling device for entrepreneurs and so increase their access to finance from the formal financial market. This view is supported by the evidence of Haynes and Ou (2003) that indicates that internal equity and commercial bank loans appeared to be complementary financial resources. That is, partnership with an angel or venture capitalist provides a positive signal to other financiers.

An optimal policy mix?

If one accepts that a government cannot introduce policies that will solve the information asymmetry problem then what options does the government have? Keuschnigg (2003) uses a sophisticated theoretical model to derive an optimal policy that he argues is able to decentralise a first best allocation in the venture capital industry. The policy mix is reasonably complicated involving a number of inter-related and inter-dependent strands. Keuschnigg's optimal policy mix involves:

- output subsidies to successfully established firms;
- revenue subsidies to entrepreneurs and venture capitalists;
- a tax on start-up investment spending;
- specific taxes or subsidies on seed investments by entrepreneurs and acquisition activity of venture capitalists; and
- government spending on basic research.

A full discussion and assessment of Keuschnigg's thesis is presented in Appendix III. Here we wish to note two key generalisations from Keuschnigg's analysis:



- It is very unlikely that any government would have the ability to effectively implement a Keuschnigg-type optimal policy mix in practice.
- Keuschnigg aptly demonstrates that adopting a piecemeal approach (i.e. cherry-picking from the optimal mix) is even worse than doing nothing.

Policy options – in practice²²

The policies adopted to address financing gaps faced by start-up businesses differ from country to country depending on:

- Institutional and cultural differences in capital markets
- Different perceptions about the source and significance of perceived financing gaps²³
- Different perceptions about the role of the state in capital markets.

Consequently, while a survey of international policies may provide ideas about the menu of policy options, it tells us little about the applicability of these policies to the New Zealand context. In general terms governments can encourage entrepreneurship by reducing obstacles to business creation and growth, protecting property rights and establishing adequate insolvency procedures and bankruptcy laws.

While the presence of entrepreneurial activity is a necessary precondition to economic growth and development, it is not of itself sufficient to ensure growth transpires. Baumol (1990) argues that while the total supply of entrepreneurs varies among societies, the productive contribution of the society's entrepreneurial activities varies much more because of their allocation between productive activities such as innovation and largely unproductive activities such as rent seeking or organised crime. This allocation is heavily influenced by the relative payoffs society offers to such activities. Baumol thus argues that policy is more likely to influence the allocation of entrepreneurship more effectively than it can influence its supply.

In this respect countries with bank-centred financial systems (e.g. Germany, France, Japan) probably tend to be less encouraging of entrepreneurial activity than stock-market centred systems (e.g. USA, UK) because banks' are naturally more conservative in terms of lending and investing – which thus limits the rewards to entrepreneurship and more severely penalises failure. Differences in financial systems are interrelated with legal developments. For example, regulatory constraints in Japan and Germany against issuing corporate bonds and commercial paper may have been a significant factor in promoting bank dependence among firms²⁴.

²² This section draws heavily on OECD (2004)

²³ The observation that some firms cannot obtain capital is not itself evidence of a gap. In a competitive market, some firms will be and should be denied financing if their risk profile far exceeds the willingness of investors to supply funds at a given rate (OECD 2004, p14).

²⁴ Berger, Allen N; Deyoung, Robert; Genay, Hesna; and Udell, Gregory F (2000) "Globalisation of Financial Institutions: Evidence from Cross-Border Banking

Government policies to improve debt financing

Direct loan programmes

Most direct loan programmes do not appear to be suitable for financing innovative SMEs since they do not share potential upside returns, but assume a significant portion of downside risks. For example, the Business Development Fund was established in Denmark to provide high risk loans to high technology projects in start-ups and established enterprises. The Fund was set up to share the downside risk, but receive only a fixed interest for commercially successful projects. As a result, more than 60% of total funding was lost on more than 900 funded projects (OECD 2004).

Loan guarantee programmes

Loan guarantee programmes transfer part of the risk of loans to innovative SMEs to the public sector. Banks administer the loans in order to contain the costs of the programmes. In most cases, the subsidy component is not the interest rate that is charged to borrowers, which is usually some conventional market rate plus a small premium, but rather the default costs which are incurred by the government net of guarantee fees received. Success hinges on the programme's ability to achieve a financially sustainable default rate while providing loans to borrowers that would otherwise have been rejected by the private financial market. Examples of loan guarantee programmes include Canada's Small Business Loans Act programme (recently replaced by the Canada Small Business Finance Programme) and the UK Small Firms Loan Guarantee Scheme.

A general assessment of loan guarantee schemes is not particularly encouraging. Most guarantee schemes may not be sustainable without subsidy and they appear to have low volumes of operations and high operating costs (OECD 2004, p33).

Schemes to pool risk

Japan, Italy and France each run schemes where agencies act as intermediaries between SMEs and financial institutions, and thus pool risks faced by private sector financial institutions. These schemes tend to be regionally based and also offer business advice to SMEs.

In some respects such schemes can be seen as alternatives to angel networks in countries that have banks dominating the financial sector. The extent to which these schemes assist innovative start-ups is not clear. Their applicability to New Zealand is also questionable given the lower importance of the banking system to funding New Zealand business activity.

Government policies to improve equity financing

Investment regulations

One of the key factors encouraging the development of the venture capital industry in the United States is the policy shift that allowed pension funds to be invested in the venture capital market. Other

Performance" *Brookings-Wharton papers on Financial Services*, Vol 3, pp 23-125, cited in OECD (2004)



countries such as Denmark, Ireland, Japan and the United Kingdom have made similar changes to the rules applying to pension funds (OECD 2004, p25).

Relaxed investment regulations do not by themselves necessarily lead to an increase in venture capital investments. For example, successive regulatory reforms in Denmark have not encouraged financial institutions to significantly expand their venture capital investments. Remaining complications in the rules, a persistently risk-averse investment culture and inexperienced fund managers are deemed to have limited the impact of regulatory changes (OECD 2004, p26). Given that the New Zealand financial market is lightly regulated by international standards, it is not obvious that investment regulations are likely to be the source of any binding constraint on the size of venture or angel capital markets.

Government equity programmes

Although the US venture capital market is considered to have developed largely without government assistance, the US government did establish the Small Business Investment Company (SBIC) programme in 1958 to stimulate the development of the venture capital industry. SBICs are privately owned and managed firms that have access to loan financing by issuing debentures, which are guaranteed by the US Small Business Administration. The guarantees are provided to the investors as opposed to the SBICs, which remain fully liable for all outstanding capital in the event of default. The SBIC funds are used to supply equity capital and long term loans to qualified US-based small businesses.

There are similar schemes in Canada (Business Development Bank of Canada), Mexico (Sociedades de Inversion de Capitales), Japan (Small and Medium Business Investment Consultation Co Ltd), and there are currently proposals for the UK.

The projected net loss on the active portfolio of the US SBIC programme is about 1.5%pa (OECD 2004, p26). This loss must raise questions about the net benefit of this scheme. That is, the low returns suggest that these investments are not the best use of these funds. Related to this, there must be questions about the extent to which SBIC type activities are crowding out private sector activity.

Direct funding

Direct funding and credit guarantees have been adopted in Korea and Germany with generally poor results. Direct funding programmes typically lack the appropriate incentive structure to carefully monitor the performance of the portfolio company. Moreover, government programme managers lack technological and management experiences to provide appropriate advice. Entrepreneurs who value independence may prefer to have the government acting as a financial intermediary to avoid monitoring and intervention by venture capitalists (OECD 2004, 28). That is, government involvement might encourage adverse selection problems, with the entrepreneurs that would benefit most from private venture capitalist supervision being the most likely to be attracted to government direct funding opportunities.

Venture capital policy conclusion

Obtaining an optimal policy for the promotion of venture capital appears to be quite complex, difficult to enforce and likely to include some unpalatable as well as some popular components (e.g. taxing as well as subsidising entrepreneurs). Keuschnigg views piecemeal policies unfavourably as in his model they never lead to unambiguous welfare improvements and sometimes to perverse effects.

We therefore endorse the view of policy implications identified in the OECD Secretariat briefing to the 2nd OECD Conference of Ministers Responsible for Small and Medium Sized Enterprises (OECD 2004):

- Throwing money at innovative SMEs is unlikely to be successful;
- The traditional tools of government (taxation, subsidies, regulation, government operations) are unlikely to be appropriate;
- What is critical is the availability of entrepreneurial, technical, managerial expertise to the providers of finance.

This last point reflects comments made earlier that the presence of venture and angel capitalists is a market response to innate information asymmetry problems in finance markets. Governments and central agencies do not have superior information or appropriate policy tools to address problems of this type. By investing their time and expertise, venture and angel capitalists can potentially overcome the information asymmetry problem. But the success of such projects will depend on the quality as well as the quantity of this time and expertise.

Application to the Angel Capital Market

If it is not apparent that there are strong justifications for policy interventions into the venture capital market in general, are there any key differentiating points with the angel capital market that might present a special case for policy involvement?

Angel capitalists invest smaller amounts and are less formal than venture capitalists. They are more likely to:

- be sole operators,
- rely on informal contacts,
- have a smaller scale operation,
- have less access to capital,
- have a lower capacity to provide a wide range of managerial advice to the entrepreneur (this is a product of scale not necessarily individual capabilities),
- have a more concentrated portfolio,
- have non-economic motivations.

Just as the existence of the venture capital market in general can be described as a response to market failures in the formal financial market, the existence of angels could be regarded as evidence of imperfections in the venture capital market – either angels are responding to unmet



demand for funds from the venture capital market or venture capital companies are missing opportunities to attract finance from angels.

If the angel financed ventures are successful, this suggests that:

- a) The angel is servicing a segment of the market or offering services (not necessarily financial) that are not being offered by the venture capital market.
- b) There are barriers that are either preventing entrepreneurial access to the formal venture capital market or dissuading the formal venture capital market to fund what on an ex-post basis would be sound investment opportunities.

Alternatively if the returns to the angel are not great this suggests that:

- c) The investment objectives of the angel are not wholly profit maximising (i.e. there might be some social objectives, community-based objectives, etc that influence the angel investors portfolio allocation decisions).
- d) The angel capital market is populated with investors that are making sub-optimal investment decisions.

These are empirical considerations and there are potentially aspects of all four of these characteristics in New Zealand. If the existence of angel capital activities stem primarily from the reasons in points a) and c) above it is not obvious that there are any serious angel capital specific policy considerations. If angel capitalists represent successful market segmentation (a), it is not obvious that government initiatives could enhance outcomes (arguably they may actually harm what is already quite successful). Furthermore, if angel investors are actually seeking non-economic goals, one can not necessarily measure the success of such projects using financial measures. Also it is not clear that financiers with non-economic aims will necessarily be responsive to policy interventions or alternatively, if there is a predominance of such motivated angel investors one might find that 'pro-growth' policies end up being hijacked for 'non-growth' ends.

Situations b) and d) might represent grounds for policy intervention. In situation b) the issue is not about the adequacy of returns to angel investors, but that entrepreneurs might not be optimising their growth potential.

Reasons why the angel investor is making poor returns (situation d) could be that angel investors:

- are poorly informed about the returns they could get elsewhere,
- are providing the entrepreneur with substandard managerial advice
- excessively value their privately held information about the risks or opportunities available from the investments,
- have ulterior motives for their investments (e.g. they may be using the investment as a takeover device, as a means of avoiding tax payments, etc).

Interestingly, policy responses to situations b) and d) would actually be about seeking ways to improve the performance of the venture capital

market and be about reducing the size (but raising the performance) of the angel capital market.

But the presence of the situations b) and d) is not necessarily sufficient grounds for recommending a policy involvement. Markets are always evolving. The presence of a problem does not necessarily constitute a secular or endemic problem. Well functioning markets actually require a degree of failure and examples of mistakes to provide signalling and learning devices for market participants. Thus the counterfactual for introducing a new policy is not whether a policy can improve the situation from today, but will it improve it compared to where the market might take us. Can policies speed up the pace of change or can they correct for some inherent problem?

Co-ordination issues

Business angels often argue that there is a lack of good investment opportunities, while simultaneously entrepreneurs complain about the difficulty of securing finance (OECD 2004). This situation has been taken as evidence of market inefficiencies in mobilising financial resources in meeting demand in the angel capital market. According to this logic a co-ordination problem exists as the invisibility of potential investors and entrepreneurs and the fragmented nature of the market place, impose high search costs for both parties.

Business angel networks (BANs) have the potential to alleviate such co-ordination problems by providing a forum for matching together private investors seeking good investment opportunities and entrepreneurs searching to raise finance. In the United States, BANs developed spontaneously with little official assistance²⁵. New Zealand's ICEHOUSE angel investor club is a local example of a market-based BAN initiative.

In other countries there have been degrees of public support for the establishment of BANs. For example, BANs were stimulated in the UK with pump-priming assistance²⁶ (£20,000 pa for three years) from the Department of Trade and Industry to five Training and Enterprise Council based projects from early 1992 (Harrison and Mason 1996). In Denmark the government has funded the creation of a national business angel network: the Danish Business Angel Network (DBAN). DBAN matches business angels with entrepreneurs through regional angel networks and an internet-based matching service (see www.dban.dk). Baygan (2003) notes that Canada has also adopted a regional approach through their Canadian Community Investment Plan (CCIP) and that this showed that projects designed according to a community's size and industrial structure could outperform more national efforts.

²⁵ Thompson, John and Choi, Sang-Mok (2002) "Risk Capital in OECD Countries: Recent Developments and Structural Issues", *Financial Market Trends*, No 82, pp 59-102, cited in OECD (2004)

²⁶ This pump-priming was originally envisaged as consisting of £20,000 per network for the first two years, but it would appear that public financial support has continued in later years and it is not clear they have ever become fully independent.



Harrison and Mason argue that public sector support for BANs is cost effective compared to other government support schemes. They also argue (but do not provide supportive evidence) that BANs do not create a significant deadweight loss, and claim that the addition to capital formation exceeds any crowding-out effects.

While the angel capital market is likely to perform better with better co-ordination and information flows, this does not necessarily mean that government support of BANs should be a preferred policy option. That BANs developed spontaneously in the US, but have not been able to operate on a full cost recovery basis in the countries where they have been set up with use of public money, should provide a warning signal that they may indeed impose deadweight loss and/or displacement effects.

Co-ordination and intermediary roles are services that are usually well rewarded, for example the banking system, or perhaps a better example is mortgage brokers. It is not clear that there is anything special about BANs that suggests they should not be self sufficient; indeed the reason given for promoting them is that there is pent up demand from potential investors and entrepreneurs who wish to find each other. So why might BANs not be self sufficient outside the US? Potential reasons include:

- BANs in many countries have simply not been given the opportunity to survive by themselves.
- BANs require economies of scale to run efficiently and other countries may not have sufficient critical mass. While this may appear at odds with the suggestion that regional and local information is important, it could be that if such localised information is what is most critical, then the co-ordination issue may not be that big.
- The premise for potential co-ordination problems (ie that investors cannot find opportunities and entrepreneurs cannot secure finance) might simply reflect a genuine lack of viable investment opportunities in combination with entrepreneurs having unrealistically optimistic expectations about their ideas.
- The lack of BANs compared to mortgage brokers might reflect the preferred tax status of housing investments in New Zealand.
- BANs may just not be effective. Indeed the Bank of England report (2001) notes that there is “very little evidence on the effectiveness of business angel networks” and goes on to say that “several business angels are critical of the quality of the investment opportunities obtained through networks” (p39).

In this regard the experience of the ICEHOUSE in New Zealand is potentially instructive. Their initial attempt at setting up an investment club targeted very wealthy potential angel investors. But these people were not interested in, or did not require, the services of a network. In its second incarnation, the ICEHOUSE’s investment network is targeting less wealthy potential investors.

Conclusion

Our discussion about the asymmetric information nature of problems in investment markets suggest that:

- there is unlikely to be a policy solution that solves the inherent problem of credit markets: asymmetric private information;
- throwing money at innovative SMEs is unlikely to be successful;
- the traditional tools of government (taxation, subsidies, regulation, government operations) are unlikely to be appropriate; and
- what is critical is the availability of entrepreneurial, technical and managerial expertise to the providers of finance.

Business angel networks (BANs) have been posited as a means of reducing potential co-ordination problems within the angel capital market. However, this does not necessarily mean that there is a role for public policy in the development of BANs as:

- it is not clear that there is necessarily a significant co-ordination problem within angel capital markets;
- there is little clear evidence about the true effectiveness of BANs in other countries; and
- what may be appropriate in another country will not necessarily translate into appropriate policy within New Zealand due to institutional and cultural differences.

Ensuring that the regulatory and tax system imposes the minimal amount of distortions to investment decisions is the generic starting point for policy initiatives relating to the efficient operation of capital markets.

From the environmental scan and the survey results there are no obvious problems thwarting the development of the angel capital market in New Zealand. There are frustrations and the speed of development in some cases might be regarded as being too slow. However, without a more explicit definition of problems than we have been able to achieve in this study, and a more detailed analysis of how government intervention could better solve the problems than market participants, we would restrict policy initiatives to assisting the speed with which markets learn from mistakes and participants gain a more sophisticated awareness of capital market processes.

Bearing in mind the cautions we have outlined above we see three areas of possible intervention:

- The education of existing and potential angel investors. Public sector effort to date has focussed on assisting entrepreneurs' with their business start ups (eg www.biz.org.nz) or their search for funds (eg NZTE's Escalator service). This could perhaps be balanced with advice services for investors, perhaps akin to the saving investment advice provided by the Retirement Commission's www.sorted.org.nz.
- Encouraging the development of business angel networks, investment clubs, etc as part of building the infrastructure that will provide the



education and build the profile of the angel capital market. For the reasons stated above we would recommend passive forms of government support rather than active, or financial, forms of support.

- Raising the profile of the angel capital market to encourage more people with capital and experience to participate in the market and inform those already in the market of different activities, recipes contacts, etc. A practical example might be the sponsorship or even organisation of a conference, or series of workshops on business angel investing. Alternatively, more publicity surrounding companies that have attracted angel investors would signal the existence of the market to entrepreneurs and investors.

The market is becoming more sophisticated over time. The above possible interventions would be aimed at accelerating the pace of development of the angel capital market and to the extent that a more sophisticated market enhances innovation and business growth, a case can be made to pursue them.

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Appendix I

Survey questionnaire

Introduction

Q1. Have you ever invested directly, either as an individual or as part of a group, in a privately owned business where there was no close family or other connection between you and the principal business owner(s)?

Exclude: - Investments in public companies through share market purchases - Investments in private businesses owned by family and friends?

Investment Activity

Q2. In the last 12 months, how many requests or proposals to invest in privately owned businesses did you receive? Exclude: - Requests for investment in private businesses owned by friends and family

Q3. Of those requests and proposals, how many caused you to seriously consider making an investment?

Q4. How many of those privately owned businesses did you invest in?

Q5. For those firms that you didn't invest in, what were your main reasons for not investing? Please mark all that apply

- The risk was too high
- The parties could not agree on a valuation or terms and conditions
- The business management lacked sufficient expertise or experience
- The business plan was not acceptable
- The proposals are still being considered
- The request for investment was withdrawn
- The business did not fit with your investment preferences
- The required level of investment was too high
- The required level of investment was too low
- The expected return was too low
- The time horizon for profitability was too long

Characteristics of Investment Portfolio

Q6. How many privately owned businesses do you currently have an investment interest in? Exclude - Investments in your own business - Investments in private businesses owned by family and friends

Q7. At what stages of development were those businesses when you first invested in them? Please mark all that apply

- Seed (e.g. investment to enable further development, testing and preparation of a product or service to the point where it is feasible to start business operations)
- Start-up (e.g. investment to enable actual business operations to get underway, including initial production and marketing)
- Early Expansion (e.g. investment to expand commercial production and marketing, but where the business is still cash-flow negative)
- Expansion (e.g. investment in an already profitable business to expand commercial production or marketing)

Q8. What industries are those businesses in? Please mark all that apply

- Agriculture, Forestry and Fishing
- Mining
- Manufacturing
- Electricity, Gas and Water
- Construction
- Wholesale and Retail Trade
- Accommodation, Bars and Restaurants
- Transport and Storage
- Communication
- Finance and Insurance
- Property and Business Services
- Education Services
- Health, Personal and Other Services

Q9. How many of those businesses do you consider are principally technology- or knowledge-based businesses? Include - Businesses where the main product depends upon the development of a new invention, patent or scientific discovery and/or firms that produce goods with a high knowledge or intellectual property content

Q10. Have you invested in businesses spun-off by Crown Research Institutes?

Q11. Have you invested in businesses that are in, or have emerged from, business incubators?

Q12. What is the total amount of uncommitted capital that you have available for investment in privately owned businesses?

Q13. What is the total amount that you have invested in those businesses? Include - Initial as well as follow on investments Exclude - The value of management services or consulting provided in exchange for equity



Q14. What is the total value of management or consulting services that you have provided to those businesses in exchange for equity?

Q15. What are your main reasons for investing in a privately owned business? Please mark all that apply

- Financial return
- To use your skills and experience
- For the challenge of building a business
- As a hobby

Q16. What is your target annual rate of return from investment in privately owned businesses?

Investment Preferences and Approach

Q17. How do you become aware of investment opportunities? Please mark all that apply

- Referrals from friends and family
- Referrals from investment brokers and other financial services firms (e.g accountants)
- Referrals from other business contacts
- Through formal investment clubs and networks (e.g. Mine)
- Firms approach me with requests for investment
- I identify my own investment opportunities

Q18. Excluding time spent actually evaluating investment opportunities, how long do you spend in a typical month searching for opportunities to invest in privately owned businesses?

Q19. Excluding time spent searching for investment opportunities, how long do you spend in a typical month evaluating investment proposals or requests from privately owned businesses?

Q20. How do you typically invest?

- Invest alone (exclude investment by the existing owner(s))
- Invest with others (i.e. syndicated or group investment)
- Mixture of both

Selecting and Managing Investments

Q21. Please rate the following investment criteria on importance to you in assessing a potential investment in a privately owned business.

- Quality of management team
- Personality and attitude of the entrepreneur

- Domestic market potential of product/service
- International market potential of product/service
- Competitive advantage of the business
- Physical location of investment
- Consistency with your investment preferences
- Regulatory burden within industry
- Quality of business plan
- Consistency with your expertise, experience or knowledge.

Q22. At what stage of business development do you prefer to invest?
Please mark all that apply

- No Preference
- Seed (e.g. investment to enable further development, testing and preparation of a product or service to the point where it is feasible to start business operations)
- Start-up (e.g. investment to enable actual business operations to get underway, including initial production and marketing)
- Early Expansion (e.g. investment to expand commercial production and marketing, but where the business is still cash-flow negative)
- Expansion (e.g. investment in an already profitable business to expand commercial production or marketing)

Q23. In addition to your role as an investor, what other role(s) do you typically play in the businesses you invest in? Please mark all that apply

- No other roles (passive investor)
- Board member
- Part-time management
- Management consultancy
- Technical Advice
- Mentoring

Q24. Are you a member of a syndicated group that collectively makes investments in privately-held businesses?

Q25. How did you become aware of that group?

- I am a founding member
- Introduced by friends or family
- Introduced by brokers or other professional services firms (e.g. lawyers and accountants)
- Introduced by other business acquaintances



Exiting Investments

Q26. In the last five years, how many investments in privately owned businesses have you exited? Include: - Sales of your ownership stake to others - Businesses that have ceased operations

Q27. What average annual rate of return did you realise on your exited investments? Include: - Investments that yielded no return

Q28. How did you exit those investment(s)? Please mark all that apply

- Business acquisition or merger
- Initial public offering (or subsequent sell-down on public market)
- Sale of ownership stake to existing owners
- Sale of ownership stake to one or more third parties
- Business ceased operations
- Business was liquidated

Investment Environment

Q29. Please indicate the degree to which you agree or disagree with the following statements

- It is difficult to find opportunities to invest in privately owned businesses
- Government policy is conducive to investment in privately owned businesses
- Entrepreneurs have unrealistic valuation expectations
- Exiting investments is difficult under current market conditions
- Most businesses that I consider investing in lack experienced management teams
- The amount of investment required by a typical firm is within my financing ability
- Most ventures lack proprietary technology/ intellectual property
- I have adequate experience in mentoring and monitoring ventures
- Access to follow-on venture capital is readily available
- I am able to find deals that match my areas of expertise/investment preferences
- There is too much money chasing too few good deals

Other Information

Q30. Have you ever founded or run your own privately owned business(es)?

Q31. Did any of those businesses have a private investor with whom you had no close family or other connection prior to their investment?

Q32. What is your age?

Q33. What is your gender?

Q34. What ethnic group(s) do you belong to? Please mark all that apply

Q35. What is your annual average household income?

Q36. What is your household's estimated net worth (i.e. total assets less debt)?



Appendix II

Business Law Reform Bill: Amendments to the Securities Act 1978 Concerning Offers of Securities to the Public

In general, offers of securities to the public for subscription are required to be made in a prospectus and investment statement which disclose all information necessary for a member of the public to assess the offer.

In certain circumstances offers may be made without such disclosure documents either because they are deemed not to be offers of securities to 'the public', or because they are exempted from the relevant disclosure provisions in the Act.

Recent amendments to the Securities Act 1978 (through passage on 7 April 2004 of the omnibus Business Law Reform Bill) extend the number of situations where offers of securities are exempted from the prospectus requirements. Specifically, the Securities Amendment Act 2004:

- Extended the exemption for close business associates and relatives of the issuer to also exempt offers made to close business associates and relatives of directors of the issuer [section 3(2)(a)(i) Securities Act]. Such an offer is deemed not to be an offer to the public;
- Deemed that offers of securities to persons who are each required to pay a minimum subscription price of at least \$500,000 before the allotment of those securities is not an offer to the public [section 3(2)(a)(ia) Securities Act];
- Created new exemptions from the disclosure obligations for offers made to certain 'eligible persons'. Eligible persons are those who are considered either wealthy, or experienced either in investing money, or in the particular industry or business to which the security relates [sections 5(2CB) to 5(2CG) Securities Act] -
 - Eligible persons are wealthy where an independent chartered accountant certifies that the person (personally, and not through trusts or associated holdings) has net assets of \$2 million or had an annual gross income of \$200,000 for each of the last two years [section 5(2CD) Securities Act];
 - Eligible persons are 'experienced in investing money' or 'experienced in the industry or business to which the security relates' (as the case may be) if an independent financial services provider (such as an investment adviser) is satisfied that the person can assess the merits, value and risks of the offer, together with their information needs, and the adequacy of information provided by the offeror. The financial services provider must give the person a written statement of the adviser's reasons for being so satisfied, and the investor must sign an acknowledgement that they have not received an investment statement or prospectus [section 5(2CE) Securities Act].

These extended exceptions are all based on the policy that the Act treats as 'the public' only those investors who need its protection. The exemptions make it easier for businesses to raise capital – in particular small and medium enterprises – as they can dispense with producing expensive offer documentation.

Offers can still be prohibited if they are misleading, and criminal liability remains under the Act for any misstatements in the offer.

Pre-Prospectus Advertising

The Securities Amendment Act 2004 also introduced changes in respect of pre-prospectus advertising. Previously, only limited statements about a proposed offer could be made before a prospectus was registered and an investment statement made available. This restricted the ability for issuers to gauge interest in an upcoming offer without getting a specific exemption to do so.

The Act now permits an advertisement to state that an issuer is considering making an offer and, if the issuer wishes, to seek preliminary expressions of interest [section 5(2CA) Securities Act].

A number of protections are spelled out to ensure that members of the public understand that the advertisement does not amount to an offer, including:

- Restricting the information that can be contained in the advertisement;
- Requiring that the advertisement state that no money is being sought and that no applications will be accepted or money received unless the subscriber has received an investment statement; and
- Prohibiting distribution of the advertisement if 6 months have lapsed since its release date.

Further protections for investors remain by virtue of section 38B of the Securities Act which allows the Securities Commission to prohibit advertisements where they are likely to mislead, deceive or confuse, or are inconsistent with the Securities Act. Under section 58 of the Securities Act criminal liability attaches to misstatements in advertisements, although certain defences apply.



Appendix III

An optimal policy mix?

If one accepts that a government cannot introduce policies that will solve the core problem at source, what are the types of options available to a government? Keuschnigg (2003) suggests that governments can be active in four dimensions:

- Spending on basic research, which has a spillover into providing a pool of potential entrepreneurs to come up with innovative ideas.
- They can internalize the positive R&D spillovers of private start-up firms by means of a subsidy.
- They can strengthen private incentives for joint effort which “tend to be too low in a situation of double moral hazard in the relationship of venture capitalists and entrepreneurs”.
- They can, at least in principle, intervene to address imbalances in bargaining power between potential entrepreneurs and venture capitalists.

Keuschnigg, with use of a sophisticated theoretical model, derives an optimal policy that he argues is able to decentralise a first best allocation in the venture capital industry. The policy mix is reasonably complicated involving a number of inter-related and inter-dependent strands.

Keuschnigg’s optimal policy mix involves:

- output subsidies to successfully established firms,
- revenue subsidies to entrepreneurs and venture capitalists,
- a tax on start-up investment spending,
- specific taxes or subsidies on seed investments by entrepreneurs and acquisition activity of venture capitalists, and
- government spending on basic research.

The aim of a mix of policies like this is to meet the main policy challenge of not only creating more start-ups to internalise the gains from product innovation but also to promote start-up firms of higher quality, where quality relates to the survival prospects. Keuschnigg emphasises that policy needs to be active on several fronts at the same time, as the utilisation of policy initiatives in isolation (ie individually not as a package) results in outcomes that either cannot be unambiguously demonstrated as being superior to the no-policy outcome or are clearly inferior.

Keuschnigg’s arguments behind each of these components are as follows:

Output subsidy – producers of new products are likely to charge a price in excess of marginal costs and thereby restrict demand in order to boost profits. These profits are necessary to reward entrepreneurs and financiers for the risk, effort and other start-up costs of a new venture. An output subsidy aims at inducing producers to charge the efficient demand price (ie equal to marginal costs) but nevertheless allow the same profit margin (ie retain incentives to innovate).

Revenue subsidy – in private equilibrium, with double moral hazard and simultaneous effort choice, there is a natural underinvestment of entrepreneurial effort and managerial support since agents must bear the full private cost of effort but share the marginal return. The government can, in principle, remedy the problem by giving a revenue subsidy (negative taxes) to decentralise the conditions for socially optimal effort levels.

Tax on start-up – if the distribution of bargaining power between entrepreneurs and capitalists is even so that it induces efficient search activity then a tax on start-up is required to undo the stimulating effects of the revenue subsidy. That is, the revenue subsidy is aimed at promoting entrepreneurial and managerial effort once a relationship is established, but this subsidy will in itself potentially induce excessive start-up activity.

Taxes or subsidies on seed investment – if the distribution of bargaining power is uneven a tax on, or subsidy to, entrepreneurs is required to balance the returns between entrepreneurs and venture capitalists, depending on the relative bargaining strength of the two sides.

Basic R&D – public expenditure should be expanded until the marginal budget cost is balanced by the reduction in aggregate private research costs of entrepreneurs. Publicly funded R&D leads to a larger frequency of start-up entrepreneurship by reducing private search and research efforts of potential entrepreneurs. The argument being that publicly funded R&D not only provides a spillover in terms of supply of potentially commercial ideas, but also in increasing the supply of potential entrepreneurs.

The main logic of the proposed optimal policy is to reward success. This should strengthen incentives for joint effort and thereby raise the success rate. Output and revenue subsidies may, however, boost entry by more than is desirable. For this reason, a start-up investment tax is introduced to prevent excessive entry. In the end, Keuschnigg suggests, net costs to public revenues might not be that large.

It is not clear to what extent Keuschnigg's suggested suite of policies actually represents an optimal mix. However, a key contribution of his paper is to highlight the pitfalls associated with piecemeal policies supporting the venture capital market. Keuschnigg models the theoretical economic consequences of the following actual or potential strategies to encourage start-up entrepreneurship, venture capital finance and innovation:

- Tax advantages for venture capital start-ups
- Subsidies for start-up capital costs by means of interest subsidies and indirect tax credits
- Funding of basic R&D in applied areas of with 'promising commercial applications'.
- Research grants
- Output subsidies

None of these initiatives yield unambiguous welfare improvements and sometimes lead to perverse effects. For example, the subsidies for start-



up capital costs by means of interest subsidies and indirect tax credits are initially likely to raise venture capital profits. But this attracts in more venture capitalists, and does not necessarily change the supply of successful ideas. This implies a reduction in the average return from venture capital investments. Thus the joint surplus falls and thereby ultimately discourages effort and lowers the average success rates. In other words the result is perverse compared with the policy aims.

Keuschnigg could also not find any unambiguous evidence for boosting public support for research or offering tax advantages based on venture capital arguments. Keuschnigg concludes that policy should be active in several fronts at the same time, but that if only a single measure was to be pursued that this should be an output subsidy. This is because the subsidy encourages joint effort between entrepreneurs and venture capitalists, encourages larger scale production and increases the variety of new firms. However, the benefits of an output subsidy are less clear over the long run and it is not clear that the short run benefits identified by Keuschnigg would be robust to an open economy analysis.

Critical assessment

While the analysis by Keuschnigg represents a commendable addition to our understanding of the interactions between policy and the venture capital market, it provides more insights about the complexities of the issues involved and what not to do rather than providing a useable policy template. We identify six key outstanding issues:

1. Keuschnigg's optimal policy still requires central authorities to have a level of information that exceeds what they will have in reality.
2. Even if the government did have sufficient information about the precise nature of the distortions, it remains difficult to implement an administratively simple system of subsidies and taxes.
3. The complexity of the optimal policy mix, combined with practical complications is likely to encourage governments to undertake a piecemeal mix of expedient policies that result in outcomes that could well be inferior to the private (non-government policy) equilibrium.
4. Some of Keuschnigg's policy recommendations are based on double moral hazard arguments. Moral hazard is a different issue from information asymmetry. While information asymmetry is essentially about difficulties in obtaining the right match between entrepreneurs and venture capitalists, moral hazard problems begin once the entrepreneur and venture capitalist have found each other and essentially relate to the complexity in design and enforcement of contract arrangements. What's good for the entrepreneur might not be good for the venture capitalist (and vice versa) and, more importantly, it may be difficult observe and monitor the other's actions.

However this issue may not be as serious in practice as suggested by Keuschnigg. First, best practice contractual arrangements have developed over time (based on country specific social and institutional settings) that both mitigate the underlying risk and the cost of designing appropriate contracts. Second, the importance of moral hazard problems is related to attitudes to risk, with moral hazard problems becoming more prominent in the presence of risk aversion. Mas-Colell et al demonstrate

that “in the principal-agent model (between owner and manager) with unobservable managerial effort and a risk-neutral manager, an optimal contract generates the same effort choice and expected utilities for the manager and owner as when effort is observable” (p482). We would contend that this is more likely to be the case in a venture capitalist-entrepreneur arrangement than in most manager-owner relationships because equity sharing arrangements makes the relationship more akin to a partnership than manager-owner.

5. It is not clear whether Keuschnigg’s analysis adequately takes dynamic incentive effects into account. For example, part of the high price set by entrepreneurs reflects a return on risk. Provisions of subsidies as suggested by Keuschnigg might potentially sub-optimally reduce this entrepreneurial risk and so lead to sub-optimal allocations (eg excessive risky investment activity).

6. Keuschnigg’s analysis is based on a closed economy – moving to an open small economy model might alter the optimal policy prescription, eg the arguments for output subsidies are less convincing in an open economy environment where demand can be regarded as unlimited and the consumer surplus benefits are exported.



Appendix IV

Econometric Analysis of Survey

The final response rate of the survey was 611 or 35.7% of the potential number. Of these, 348 could be described as angel investors. Our understanding is that both the absolute number of respondents and the response rate as a proportion of those approached, are very good by international standards for this subject. Indeed the number of respondents as a proportion of the likely total number of angel investors in the New Zealand population is probably quite high. Thus the survey delivers a considerable amount of descriptive information about angel investors.

While we should not ignore the possibility that there is some bias in the response rate owing to the sample selection method, the number of responses to any given question suggests that we can be reasonably confident about the answers – to that question. However, cross-tabulations of more than one question at a time are likely to contain much wider error margins, depending on the number of responses in each of the tabulated questions. This needs to be borne in mind when reading the analysis described below.

Econometric and statistical analysis

Simple statistical descriptions provide a useful overview of the characteristics of angel investors; their methods, preferences, opinions and so on. From these descriptions it is always tempting to draw inferences about links between variables and possible causative influences. For example, we may observe that most successful angel investments are by investors of high net worth and simultaneously that most successful angel investments are in manufacturing. Which of these has the stronger effect on returns and to what extent might wealth be a proxy for experience, via the effect of age?

Econometric analysis can be used to try to isolate the separate influences of the various underlying factors. Note, however, that even econometric analysis does not tell us anything about causation, especially with cross-sectional data. It will reveal where the true correlations exist (if the models are correctly specified), but we rely on theory and reasoning to establish causal links.

With the survey having so many questions it was originally our intention to undertake some form of factor analysis or principal components analysis on the whole dataset, in order to establish whether responses exhibited any form of clustering around certain attitudes or investor behaviour. This type of analysis is useful in situations where there is a group of variables that are reasonably closely related (such as age, income and education), making it difficult to identify robust relationships between variables. The survey response dataset does not have this characteristic. There are too many different types of questions for distillation into one or even a few dominant signals without some guidance from theory or other empirical research.

Also, from a purely practical perspective, the dataset contains too many missing values (non-responses), relative to the total sample size, to

permit analysis of the whole sample at once. This means that some a *priori* selection of variables is required.

We have therefore chosen two approaches for the analysis of the dataset. Firstly we define two specific questions that seek to determine what factors contribute to a successful angel investment:

- What factors are associated with a successful exit (using the responses to Question 28 to define the dependent variable as the net number of successful exits)?
- What factors are associated with a high rate of return at exit (using the mid-points of the response options for Question 27 as the dependent variable)?

These questions are explored using multiple linear regression with a “general to specific” methodology. Sample size restrictions have forced us to omit industry type as an explanatory variable.

Secondly, in an attempt to return to the idea of a typical angel investor, we analyse two questions that ask investors about their opinions on a range of issues. Principal components analysis is used for this task. The two questions are Question 29 which asks about the angel investment market environment, and Question 21 which asks about angel investment criteria.

Based on the discussion in the body of the report we examine the above questions for three different groups of investors:

- All angel investors – those who answered ‘yes’ to Question 1.
- Passive investors – those who reported ‘no other roles’ under Question 23.
- Active/astute investors – those who reported ‘board member’ under Question 23, AND reported net household wealth above \$2m under Question 36.

Successful Investment

All angel investors

Net number of successful exits (N=174, R²=0.21)

Variables with a positive effect	Variables with a negative effect
Preference to invest at early expansion stage	Emphasis on competitive ness
Amount invested	Emphasis on regulatory burden
Opportunities via referrals from business contacts	Part time management of target business
	Opportunities through friends and family

Average rate of return (N=287, R²=0.12)



Variables with a positive effect	Variables with a negative effect
Amount invested	Opportunities through investment clubs and networks
Emphasis on quality of management team	
Time spent searching for opportunities	
Mentoring to target business	
Opportunities via referrals from investment brokers etc	

Neither equation produces a strong fit. The exit equation reveals that number of successful exits is highest when angel investors have a preference to become involved at the early expansion stage. Also the greater the value of the funds invested, the greater the number of successful exits – perhaps indicating more care when more money is at risk, or perhaps acting as a proxy for experience. Awareness of investment opportunities is via other business contacts, not from family and friends.

Placing a high weight on a business's competitiveness or the relevant industry's regulatory burden does not enhance the probability of a successful exit.

The rate of return equation is reasonably consistent with the exit equation. In addition to amount invested, investors who place a high weight on the quality of the management team and who mentor to the target business enhance their rate of return. More time spent searching for investment opportunities also helps.

Passive investors

Net number of successful exits (N=36, $R^2=0.57$)

Bearing in mind the small sample size, the results are as shown below.

Variables with a positive effect	Variables with a negative effect
Emphasis on international market potential	Competitiveness of business
Emphasis on quality of business plan	
Investing for the challenge of building a business	
Investing as a hobby	
Opportunities through friends and family	
Opportunities through business contacts	

Average rate of return (N=80, $R^2=0.32$)

Variables with a positive effect	Variables with a negative effect
Time spent evaluating investment proposals	Preference to invest at start-up
Investing at seed stage	Investing at expansion stage
Emphasis on regulatory burden	Time spent searching for opportunities

The exit equation suggests that passive investors are a mixed group, with successful investors comprising both hobbyists and those desiring the challenge of building a business; and comprising both those who secure their opportunities through business contacts and those who secure them from friends and family.

The rate of return equation confirms the importance of spending time evaluating proposals, but dismisses the importance of time spent searching for opportunities. Investing at the seed stage has a positive effect on the rate of return, in contrast to investing at the expansion stage.

Active/astute investors

Net number of successful exits (N=80, R²=0.32)

Variables with a positive effect	Variables with a negative effect
Preference to invest at expansion stage	Emphasis on international market potential
Amount invested	
Investment consistent with own expertise	
Age 20-29	
Referrals from friends and family	

Average rate of return (N=82, R²=0.28)

Variables with a positive effect	Variables with a negative effect
Time spent evaluating opportunities	Preference to invest at start-up
Emphasis on financial return	Emphasis on international market potential
	Household income

The exit equation implies that the successful astute/active angel investor prefers to invest at the expansion stage and in businesses that are consistent with their own expertise and experience. Referrals from family and friends has a positive effect, suggesting that for this group of investors, referrals from businesses contacts and other formal networks do not enhance the likelihood of successful exit. The group may be astute, but this does not mean that they shun informal networks.

The rate of return equation demonstrates the importance that this group of investors attaches to research and to achieving a financial return.



Household income has a negative effect, but recall that this group is confined to people with a net household wealth above \$2m.

The typical Investor?

Question 29 (Investment Environment)

Filtered for respondents who are defined as angel investors (that is, answered 'yes' to Question 1), the mean scores direct from the survey for each of the statements in Question 29 provide the following general picture:

1. Investors have difficulty finding investment opportunities in private business
2. Government policy is not conducive to such investment
3. Entrepreneurs have unrealistic valuations
4. Exiting the market is currently difficult
5. Target businesses lack experienced management
6. The amount of investment being sought is generally within what the investor can afford
7. Target businesses lack proprietary technology
8. Investors have adequate experience in mentoring and monitoring
9. Access to follow-on venture capital is not readily available
10. Investors are able to find deals that match their expertise and preferences
11. There is too much money chasing too few deals

[No significance attaches to the order above – it is just as given in the survey]

Principal components analysis allows us to see if these views (or some other combination of opinions) represent those of a 'typical' angel investor. Such analysis shows that the first three principal components explain 89% (82%, 4% and 3% respectively) of the total variance.

The first principal component is consistent with all of the statements as worded above, suggesting that angel investors hold very similar views about the investment environment.

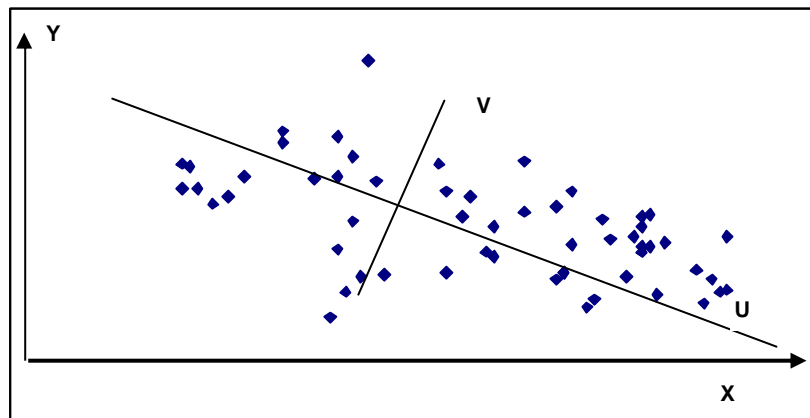
The table below shows the explanatory power of the 1st-3rd principal components for all angel investors, for passive investors, and for active/astute investors. The two subgroups show much less uniformity of opinion than the overall group.

	All	Passive	Active/astute
1st PC	82	26	17
2nd PC	4	17	16
3rd PC	3	11	14

Principal component analysis

Principal component analysis (PCA) is a mathematical procedure that transforms a number of (possibly) correlated variables into a (smaller) number of uncorrelated variables called principal components. The objective of principal component analysis is to reduce the dimensionality (number of variables) of the dataset but retain most of the original variability in the data. The first principal component accounts for as much of the variability in the data as possible, and each succeeding component accounts for as much of the remaining variability as possible.

In two dimensions principal components may be seen as a rotation of axes. In the diagram below the scatter plot shows a collection of (x,y) pairs. However, if the original X-Y axes are rotated to form axes U-V, it is clear that most of the variation occurs along the U axis. The first principal component is therefore U and it is a linear combination of X and Y. The second principal component is V. It is orthogonal to u and is also a linear combination of X and Y.



There are always as many principal components as there are original series. And each principal component is orthogonal to every other one – something we can easily imagine in two or three dimensions, but the mathematics applies in any number of dimensions.

For passive investors the first principal component is still completely consistent with the eleven statements given above, suggesting that while views are diverse, the single largest body of opinion is in accordance with the wider group of angel investors.

For active/astute investors, there is even more diversity. In addition, the signs on the 2nd, 6th, 9th and 10th, statements above are reversed in the first principal component. That is, there is a dominant group of active/astute investor who think that:

2. Government policy is conducive to such investment
6. The amount of investment being sought is generally not within what the investor can afford
9. Access to follow-on venture capital is readily available



10. Investors are unable to find deals that match their expertise and preferences.

Given the low degree of clustering for this group, not too much should be inferred from these results. Overall, while angel investors as a whole share similar views about the investment environment, sub-groups of investors show considerably more diversity.

Question 21 (Investment Criteria)

For this question the typical investor attached more than average importance to all criteria listed below except No 6.

1. Quality of management team
2. Personality and attitude of entrepreneur
3. Domestic market potential
4. International market potential
5. Competitive advantage
6. Physical location
7. Consistency with investment preferences
8. Regulatory burden
9. Quality of business plan
10. Consistency with own experience, expertise of knowledge

[No significance attaches to the order above – it is just as given in the survey]

Principal components analysis on the responses again reveals an integrated picture. The first three principal components explain 78% (64%, 8% and 6% respectively) of the total variance. All criteria have a positive weight in the first principal component, including physical location.

The table below shows the explanatory power of the 1st-3rd principal components for all angel investors, for passive investors, and for active/astute investors.

	All	Passive	Active/Astute
1st PC	64	33	19
2nd PC	8	16	15
3rd PC	6	10	14

As with Question 29 there is more diversity of opinion amongst the subgroups than amongst the group as a whole.

For the passive investor group, the signs on each variable in the first principal component are not consistent with the typical responses for the whole group. In particular there are sign reversals on the 1st, 3rd, 6th and 9th criteria. That is, the quality of the management team, domestic market

potential, and the quality of the business plan are given a low weight, while location is given a high weight – by passive investors. The same sign reversals apply to the active/astute group, with the 7th criteria (consistency with investment preference) also changing sign.

Conclusion

While the results for Questions 21 and 29 suggest a reasonable degree of consistency in market views and investment criteria for angel investors as a whole, particular sub-groups display much more diversity.

It could be that the two subgroups as defined here, although based on the results of the interviews in the environmental scan, cannot be adequately identified in the survey population. This could mean that the environmental scan has been somewhat misleading. Equally, if not more likely, however, is the possibility that although passive and astute investors are different in some key respects, their attitudes to angel investment are not the main differentiating factors. The size of the survey, the way the questions were asked, and the problem of missing values; all make it difficult to robustly identify the characteristics of passive and active/astute groups of investors.

The survey was primarily intended to capture information that could be used to describe the broad attitudes, behaviour and characteristics of angel investors, rather than supply the type of comprehensive data that is required for econometric analysis.

Should the opportunity arise to undertake another survey, the following changes are recommended:

- Where investors have more than one current investment, it would be extremely useful if the characteristics of each one were separately identified; for example industry, development stage, how discovered, degree of involvement and so on. Similarly for investments that have been exited, so that the characteristics of the investor could be separated from the characteristics of the investment – in an analysis of the types of exit and rates of return achieved. We recognise that this would significantly lengthen the questionnaire and would therefore increase the rate of non-response.
- Non-responses are a problem for econometric analysis, both because it reduces the number of usable observations and because the non-response may not be unbiased. For example some ethnic groups may be more likely to refuse to answer a question on ethnicity than other groups. Although the survey was rather long there is no suggestion that the response rate declined as respondents worked through the questionnaire, except at the very end where the traditionally sensitive questions about income and wealth were located.
- Meeting the twin objectives of both a shorter survey and a more detailed one is undoubtedly difficult. A necessary condition is that the survey has clear objectives and is designed with the type of analysis that is subsequently intended firmly in mind.
- The web-based survey system has the very substantial advantage of being fast and efficient, thereby reducing respondent burden. Like mail surveys, however, it is difficult to ensure an unbiased response rate.