

**Motivations, Behaviour and Cognition of
Novice and Habitual Business Angels
In New Firm Incorporations**

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ABSTRACT

Re-investment is vital to the business angel “industry” because re-investing angels endorse a greater number of entrepreneurs and invest more funds than non-re-investing angels. In this exploratory empirical analysis, the appraisal qualities of business angels are examined relative to their impact on producing successful investments as well as their impact upon re-investment. The three appraisal qualities investigated are business angels’ motivations, their deal generation behaviours and the cognitive heuristics of overconfidence and representativeness. The analysis is based on the information model of the existence of the formal venture capital industry.

A typology of business angels is introduced based on 1) their intentions to re-invest and 2) their exit status at re-investment. Business angels who have re-invested are classified as habitual angels. A novel data set reveals information about angels’ first to fourth investments that allows for comparability between novice and habitual angels’ first investments. The data set is randomly sampled from a known population of newly incorporated firms on the east coast of Canada producing a more representative sample than other business angel studies. Six in-depth case studies add to the findings.

The findings indicate that financial motivations, intermediated deal generation and under-confidence are associated with financially successful informal venture capital investments. However, compared to novice angels, the representative sample of habitual angels eschew financial motivations and intermediation, and are characterised by overconfidence at the level of their first investment. Habitual angels demonstrate some qualities that indicate they learn with subsequent investments. Implications for policy makers, business angels and entrepreneurs are included.

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1 Introduction

1.1 Introduction

An entrepreneurial revolution has been buoyed by the recognition of the importance of young firms to national economies and particularly to new employment created (Kirchoff, 1997), since a small percentage of these new firms will go on to provide significant employment opportunities in the ensuing decades (Birch, 1987). A major sector of the new entrepreneurship literature is that which relates to the financing of entrepreneurial firms which is central to their future growth and prosperity (Binks, Ennew, & Reed, 1992).

The range of financing options that are available to larger, quoted firms are not accessible to smaller, younger, and more vulnerable entrepreneurial firms. Entrepreneurial firms are characterised by sparse information, highly uncertain circumstances, and where entrepreneurs know more about their prospects than their potential financiers. Venture capitalists are intermediaries with specialist appraisal, monitoring and financial skills who invest by taking equity in entrepreneurial firms that have a large up-side potential (Wright & Robbie, 1998). Investing funds provided largely by institutional investors, venture capitalists provide value to investees in highly uncertain situations. Thus, they are able to overcome informational differences between the entrepreneurs and their investors to produce abnormal returns (Lockett, Murray, & Wright, 2002).

The market for venture capital is fragmented and is characterised by formal venture capital, informal venture capital and venture capital gaps (Fiet, 1996). For a variety of reasons, formal venture capitalists often deal in sums of finance that now exceed \$5 million US (Sohl, 2003). The growing size of funds, the costs associated with smaller deals and the limited number of ventures with upside potential are just some of the reasons why they gravitate to

larger deals (Murray, 1999). A complement to formal venture capital, referred to as informal venture capital, is provided by individual investors called business angels, who cater to investments of up to \$2 million (Sohl, 1999). An equity gap emerges for firms which have financial needs that range between the two, thus leaving many early-stage entrepreneurs without recognized sources of finance that would enable them to achieve the size and maturity necessary to acquire formal venture capital. On the other hand, the equity gap argument is countered by substantial information which indicates there are numerous investors who cannot identify suitable investment opportunities (Mason & Harrison, 2001a).

To the extent that business angels provide sums of finance that attempt to fill gaps or find more opportunities, their efforts are important to entrepreneurs and economies that seek to encourage entrepreneurs. The increasing presence of networks, multi-investing angels, business introduction services (BIS) and tax incentives points to the importance placed on the role of the business angel in providing early stage finance for entrepreneurs. This study will investigate the characteristics of angel appraisal and their subsequent re-investment.

1.2 The Links Between Appraisal, Performance and Re-investment

Business angel investments are operationally defined by Sullivan (1991) as “money provided by a private individual to a private business through non-institutional channels” (p. 460).

Whereas formal venture capitalists represent professionally managed pools of funds, informal venture capitalists make private equity investments from their personal funds. They occupy a crucial step on the financing ladder for firms in need of private equity when their entrepreneurial monies and friends and family have been exhausted in getting “beyond the prototype or proof-of-concept stage” (Mason & Harrison, 2001b p 137). Other than the provider of funds, their role is vital since some business angels are cashed-out entrepreneurs who have significant non-financial contributions to offer young start-ups and seed stage entrepreneurs (Mason & Harrison, 2006). They are considered non-professionals (Lerner,

1998) because of their lack of formal investment skills. Some angels are interesting anomalies, and the wild successes of others ignite our imaginations. Research in the area of informal venture capital has been growing in interest over almost three decades, although Baty and Sommer (2002) argue that “the ratio of understanding of the angel capital market to its impact on the economy is lower than just about any other economic contributor” (p. 289).

However, investing informally is a more uncertain proposition than formal venture capital investing because the associated uncertainties are compounded at the level of the informal venture capitalist. Firstly, the smaller start-ups and early stage firms often have no information and control systems. Secondly, unlike formal venture capitalists, business angels are not professionals (Lerner, 1998) and do not have specialised appraisal and monitoring skills. This places business angels in a uniquely precarious situation, and one that has yet to be fully understood.

1.2.1 Industry Perspectives

The overall market for entrepreneurial finance is fragmented (Fiet, 1996) and the sector representing informal venture capital is very fragmented, typified by thousands of small sellers. At first glance, this may appear like a suitable opportunity for perfect competition, however, the lack of communication amongst buyers (entrepreneurs) and sellers (business angels) obfuscates information transfer producing market inefficiencies (Besanko, Dranove, Shanley, & Schaefer, 2004). Despite the importance of informal venture capital to economies at a macro level (Van Osnabrugge & Robinson, 2000), market inefficiencies have fostered a reluctance to refer to informal venture capital as an industry. However, large estimates of informal venture capital activity (Mason & Harrison, 2001b; Sohl, 2003), the formation of networks to increase communication, the formation of BISs to facilitate transactions, and the formation of angel academies for angel edification (San Jose, Roure, & Aernoudt, 2005) all

suggest that industry and market structure perspectives are warranted. This viewpoint has been largely missing from the literature.

To further the aim of investigating informal venture capitalists from an industry perspective, an examination of the strategies and success orientations of the larger -- in this case, more prolific -- business angels is necessary. Called variously serial (Van Osnabrugge, 1998a) and portfolio angels, and deal makers (Kelly & Hay, 2000), the multi-investing business angels represent the sector which sell the most finance and who are perceived to be the industry's most successful participants. It is felt that repeat investors represent a greater proportion of the supply of informal venture capital (Kelly & Hay, 1996a) and apparent success is implied by those who make a number of deals (Kelly & Hay, 2000).

1.2.2 Re-investment by Business Angels

There is recognition of considerable heterogeneity of angels (Freear, Sohl, & Wetzel, 1992) at the individual level evidenced by the various typologies and categorisations developed (Gaston, 1989; Stevenson and Coveney, 1994; Landstrom, 1992). However, one area of heterogeneity that has hitherto received little systematic empirical attention is angels who re-invest. Over the past decade, a handful of studies have examined them tangentially. Known previously in the literature as serial angels, interest in multi-investing angels has grown to include comparisons of their activities with non-serial investors (Kelly & Hay, 2000; Kelly & Hay, 1996b; Van Osnabrugge, 1998a) and how their serial status affects the quality of the deals that are referred to them (Kelly & Hay, 2000). The nature of the differences between an angel who invests once (and then never again), and those who choose to re-invest are important to understanding the phenomena. Hence, these are subjects worthy of study in the effort to understand the phenomena of informal venture capital investing.

In the formal venture capital industry, re-investment is vital because it plays a central role in securing the industry's vitality. In the formal venture capital literature, the success of the formal venture capital industry is attributed to venture capitalists who are efficient and effective in their appraisal procedures and who go on to re-invest (Amit, Brander, & Zott, 1998). Those who are the most capable appraisers realize successes from their portfolio, achieve positive returns for their limited partners, and are thus capable of raising new funds. In their ability to raise new funds, they can re-invest. The continued health of the industry, therefore, is built upon the successes of the capable venture capitalists who are endowed to re-invest.

Furthermore, the importance of studying habitual behaviour is typically underwritten by the expectation that experience gained from previous ventures leads to reduced risk for future investments (Carter, 1999). For example, serial entrepreneurs use previous experiences to identify new deals and to structure deals to their success in the acquisition of venture capital (Wright et al., 1997b). However mixed results regarding learning appear in the entrepreneurship literature. Repeated evidence indicates a lack of any clear evidence that habitual entrepreneurs' businesses perform better than those of novices (Birley & Westhead, ; Kolvereid & Bullvag, 1993; Westhead & Wright, 1998, 1999b).

The debate whether previous experiences improve learning between one venture and the next (Sitkin, 1992) is fuelled by entrepreneurs who may bring both assets and liabilities from previous ventures. Assets might include managerial, technical, financial and marketing skills and expertise useful from one business to the next. Liabilities, however, may include an inclination to treat new situations with previously learned methods that are no longer appropriate given changed circumstances (Starr & Bygrave, 1991). For some entrepreneurs, re-venturing causes experience-related problems because of attribution distortions. Simply put, previously successful entrepreneurs come to believe they have superior abilities.

McGrath (1999) outlines anecdotes of previously successful entrepreneurs who carry their

former abilities to new situations, thus becoming a draw for “investment and attention that they do not merit” (p. 20).

1.2.3 Research Focus

Given our interest in angels’ re-investment behaviour, this research focuses on explaining re-investment behaviour drawn upon advances in formal venture capital hewn from the information theory. Advanced by Amit et al. (1998), the vitality of the formal venture capital industry is explained by the attributes of investment appraisal which precipitate investment performance which precipitate re-investment. Thus, if business angels’ repetitious behaviour has antecedents similar to the formal venture capital industry, then effective appraising angels who experience investment success will become re-investing angels.

There are four major objectives of this research study. The first is to examine the appraisal qualities of angels to identify whether differences exist amongst various cohorts, specifically targeting the re-investing angels and the various types of non-re-investing investors. A variety of cohorts will help identify the degree of heterogeneity that exists amongst the group. Further, the question of whether or not re-investment behaviour can be predicted by early investment activities is explored.

The second objective examines whether certain appraisal qualities are highly associated with angels’ abilities to effectively exit from the investment – a measure of performance capability. There is an assumption that multi-investing angels experience more favourable performance giving rise to titles such as “deal-makers” (Kelly & Hay, 2000). Prior to 2002, and the publication of the first in-depth investigation of informal venture capital returns (Mason & Harrison, 2002), there was little evidence to support this assumption. Thus, in this study, appraisal qualities are examined in light of their effect on investment performance.

The study identifies which qualities are predictors of successful investment performance helping to inform us about the qualities that are useful in predicting success.

The third major objective is an effort to understand whether an angel's exit performance has any bearing on their re-investment habits. Do they depend on investment success for re-investment? The informational model as proposed by Amit et al. (1998) indicates that venture capitalists who have successful investment performances gather reputation and credibility from their industry network which allows them to raise new funds. If their model were to apply to the informal venture capital sector, business angels would need successfully cashed out investments, or at least a reputation for such, in order to re-invest.

The final objective rests on the nature of the differences (or similarities) between the same appraisal qualities and whether they are learned (via subsequent investment events) or whether they differ *ex ante*. The importance of studying habitual entrepreneurship is typically underwritten by the expectation that experience gained from previous ventures leads to reduced risk for future entrepreneurial investments (Carter, 1999). The potential learning effects of a series of investment events have been noted in the limited serial angel literature (Kelly & Hay, 1996a; Van Osnabrugge, 1998a). Whereas angels have no training to learn how to do what they do (unlike formal venture capitalists who may apprentice at the side of a seasoned veteran for years), they often have significant entrepreneurial backgrounds (Harrison & Mason, 1991) that may provide useful experience at the outset of their investment careers. Some business angels may come to the field with a better financial acumen and understanding of business than some others. While learning may take place, this study also takes the view that there may be some qualities that distinguish re-investing angels from non-re-investing angels from the outset.

Two other significant contributions are accomplished in during the process of exploring the primary objectives. The first is a novel methodology which addresses a number of issues

which have been discussed widely in the business angel literature. There is a concern about sampling methods that have resulted in convenience samples hence hampering statistical inferences about populations. This is discussed in dozens of previous studies. The method advanced here works with a known and quantifiable population of young companies. The novel methodology is used to produce a data set that investigates several investments by each business angel in chronological order.

The other tangential contribution is a typology that differentiates re-investing and non-re-investing angels utilising criteria that are meaningful and useful. The typology is based on angels' re-investment habits or expectations and the concurrence of their investment activities. The typology draws heavily from the entrepreneurship literature for its composition and defines business angels into novice and habitual angels.

In summary, the research is motivated by a small number of key questions:

1. Are there significant differences between re-investing and non-re-investing business angels as regards the manner in which they appraise investments?
2. Are some appraisal qualities associated with performance?
3. Is successful performance associated with re-investment or non-re-investment behaviour?
4. Which of the appraisal qualities demonstrates learning amongst angels?

In the process of accomplishing these objectives, a novel methodology produces a novel data set, and a meaningful typology is constructed.

1.2.4 Implications of Understanding Appraisal, Success and Re-investment

Understanding the underlying heterogeneity suggested by the possible appraisal profiles of novice and habitual angels, and their success and re-investment activities, have broad implications for angels, entrepreneurs, venture capitalists, policy makers, and scholars.

Angels can benefit from having insight into their own appraisal processes, particularly those qualities that may be more highly correlated with successful investments. Where discrepancies between their actions and demonstrated appraisal activities are apparent, angels can make deliberate remedial efforts. The ability to cooperate with angels, act as informants or provide exit routes for angels may accompany a formal venture capitalists' understanding of habitual angels. To the extent that findings may influence networks and BISs, angels may increase (or decrease) their communication efforts with other angels. Whether habitual angels may be identified *ex ante* presents the potential to predict if a novice angel is to become an habitual. On the other hand, ascertaining angels ability to learn (or not) could suggest professional development topics for angel academies and business angel networks (BAN).

Entrepreneurs can benefit from the knowledge that some angels are more suitable to their prospects than others as well as fine tuning their search for finance to ensure that angels' appraisal needs are met. Better knowledge of habitual angels can assist entrepreneurs to identify more appropriate sources of finance. If certain appraisal qualities are associated with successful investing, entrepreneurs may want to broaden their angel search tactics to identify angels whose appraisal qualities are similar to those of the successful investors.

Since many policy initiatives are designed to increase the accessibility of early-stage capital (Gompers, Lerner, Blair & Hellmann, 1998), informed opinion needs to recognise the differing needs re-investing investors. Policy makers who want insight into the operations of the informal 'industry' can see how appraisal affects success and how success affects re-investment. Understanding how appraisal qualities influence re-investment may improve developments towards increasing the size of the asset class, or the qualities necessary for angel success. The subtleties of heterogeneity can inform policy makers about programs designed to assist different types of entrepreneurs whose needs are suited to specific angels. Further, scholarly and policy-oriented educational efforts can be tailored to the needs of various clusters of angels.

1.3 Structure of the Study

The research is divided into nine chapters. Following this introductory chapter, Chapter 2 is an industry- and firm-level review of formal and informal venture capital. The chapter begins with a review of angels and the various taxonomies developed to date. A review of the information asymmetries arising from agency theoretic issues provides a framework to understand supply and demand issues as well as the equity gap. This is followed by an examination of informal venture capital using the perspective of the stages of the venture capital process as outlined by Wright and Robbie (1998). Thus, Chapter 2 speaks to the deal generation, screening, due diligence, structuring, monitoring and exit stages of the venture capital process and draws upon basic insights from formal venture capital to investigate informal venture capital. The theory and informational arguments presented provide insights regarding formal venture capital and provide a basis for comparison from business angels. In the last section, performance concerns are addressed taking into consideration some of the discrepancies between reporting required by formal and informal venture capitalists.

Moving towards an understanding of repeat investment behaviour, Chapter 3 discusses a number of issues related to the nature of habitual activity. It begins by developing a typology of re-investing angel behaviour that permits distinctions between angels who have invested more than once, their intentions to re-invest, and the concurrence of their investments. This permits the use of a standardised terminology for the remainder of the thesis. This is followed by a section that highlights the importance of re-investment to the formal venture capital industry. The perspective from the well developed entrepreneurship literature regarding novice and habitual behaviour is deemed relevant because of the large quantity of angels who have an entrepreneurial background. In particular, this section investigates process-oriented qualities regarding business start-up habitual behaviour such as motivations, opportunity

search and cognition. Experience-based behavioural changes are also addressed which speak to the qualities of learning. These are linked to similar appraisal qualities for business angels.

Chapter 4 uses the varying informational holdings between entrepreneurs and angels, between venture capitalists and angels, and between serial and non-serial angels to propose hypotheses related to the angels' appraisal qualities. Motivations, deal generation, cognition are the appraisal qualities for which propositions are advanced regarding re-investment. The possible performance effects of various appraisal qualities are also considered. The last hypothesis considers the effect that performance has on re-investment. Fourteen hypotheses are developed.

Chapter 5 profiles the methodology, the measures and the sample descriptives and characteristics. The chapter begins with a summary of the concerns that have plagued angel research over the past two and a half decades. As a result of narrowly defined and convenience sampled studies, biases are present that are hard to define. The possible biases of other sampling methods are discussed. A two-stage survey methodology is designed to produce a more representative sample of angels using the registrations of new firm incorporations in Atlantic Canada (the four easternmost provinces of Canada). Atlantic Canada was selected because it is a mix of small urban and rural population, its proximity to the researcher, and there is not a dominant venture capital presence in the community (such as Texas, California, London or Boston which may be atypical of most communities). The measures used in the data collection are described, and some initial results are presented.

Chapter 6 is the first of three chapters highlighting the results and addresses research questions 1 and 2. Chapter 6 conducts bi-variate and multi-variate analysis on the motivational, cognitive and deal generation variables. The findings differentiate the motivational, deal generation and cognitive differences between novice and habitual angels.

Eight independent variables and three control variables suggest a variate which most closely describes habitual activity using the multi-variate analytical tool of logistic regression.

Chapter 7 examines the influences of the various appraisal qualities on exit performance and whether exit performance is associated with re-investment. These results address research questions 3 and 4. Various states of exit indicate different levels of performance, and business angel performance is gauged using these measures. The second half of the chapter presents result of the multi-variate regression prediction of whether success is needed for re-investment in the informal sector of the private equity industry. Results that relate to research question 4 are addressed variously throughout this and the previous two chapters.

Chapter 8 supplements the quantitative analysis with a qualitative approach as the cases of six multi-investing angels are explored in depth. Their observations about their motivational, deal generation, exit and performance strategies are used to provide context to the findings developed from the previous two chapters. Personal interviews with re-investing angels provide specific details about their activities and suggests explanations for some of their motivations and deal generation activities that improve the validity and interpretation of the results. A number of observations are link the case studies to the quantitative results in Chapters 6 and 7 and the literature.

In the last chapter, Chapter 9, the conceptual developments, issues and implications are discussed. Major changes in the way we think about multi-investing angels are first addressed as the results provide interesting fodder for reflection. A number of specific findings are addressed as are the implications for entrepreneurs, angels and policy-makers. The conclusion and future research opportunities close the discussion.

1.3.1 Contribution and Conclusion

The contributions of this study are four-fold. The study conducts a review of appraisal qualities (motivations, deal generation and cognition) that span a variety of dimensions in order to more fully understand the nature of re-investing angels and how they differ (if at all) from non-re-investing angels. The links between appraisal qualities, successful investing and the propensity to re-invest will aid in defining the nature of the industry sector of informal venture capital. In so doing, some observations about the learning or *ex ante* differences between various types of angels can be made. To the extent that a novel methodology produces a more representative group of angels, an understanding of breadth of the angel population is possible. Furthermore, the data investigates angels' first four investments and therefore is not subject to criticisms that novices' first investments are being compared to the re-investments of more experienced angels.

2 Industry and Firm Level Review of Informal Venture Capital

2.1 Introduction

The body of literature regarding informal venture capital is growing rapidly. This is, in part, because of its importance to the early stages of entrepreneurship and hence policy-makers, as well as the size of the capital pool invested and available. Wetzel's earliest work identifying the importance of individuals who invest in others' entrepreneurial endeavours spawned considerable interest in the area. Moreover, in countries with developed venture capital markets, it is now generally accepted that the amount of informal venture capital invested is larger than that of formal venture capital (Harrison & Mason, 1996)¹.

The purpose of this chapter is to review the literature regarding informal venture capital and to distinguish it from the more widely studied and theoretically grounded literature in formal venture capital. The literature is examined from market and industry level perspectives, and the firm level perspective. This section reviews the nature of private information and resulting asymmetries and proceeds by reviewing present equity gaps and the supply and demand effects. The next major section assesses the firm level perspective by looking at the entrepreneurs negotiations with the angels, and the outside buyers informational needs when angels try to sell their shares in entrepreneurial firms. The last major section scrutinizes the performance of informal venture capital investments as measured by rates of return.

¹ The brief, but unprecedented, increase in US formal venture capital, which reached almost \$90 billion (PricewaterhouseCoopers, 2002) during the height of the dot.com period, may have been the exception to this generality. However, the subsequent adjustment to less than \$20 billion in 2003 has renewed estimated proportions of informal and formal venture capital.

At the industry level, firm level and performance sections, the theoretical and empirical evidence is contrasted with that of formal venture capital from the perspective of information asymmetry. There are fundamental differences between formal and informal venture capitalists which have material effects on the way informal venture capitalists behave.

Principal among these is that informal venture capitalists are not intermediaries. They invest their own funds and are not responsible for reporting to, or being answerable to, any other parties (Van Osnabrugge, 1998b) whereas formal venture capitalists are investing funds and acting on behalf of limited partners, or their institutional owners in the case of captives.

Formal venture capital has a longer history of study from this theoretical perspective. There is no coherent theory that explains and predicts informal investment behaviour because it is a newer area of study. Understanding the mechanisms business angels adopt is still ripe for study, particularly from a theoretical perspective.

Lastly, and leading from the previous reason, is that the range of information flows between informal venture capitalists and their entrepreneurs are likely to be greater since some of the entrepreneurs will be known to the informal venture capitalist. Because the informal network often passes projects from one individual to another (Fiet, 1995a), the incidence of business angels in firms where the entrepreneur was known to the angel or someone the angel respected is expected to be high. It is argued that informal equity investments reduce asymmetric information and related costs because when information is disclosed through private negotiations, individuals are more likely to be forthcoming (Pettit & Singer, 1985).

Additionally, the incidence of investments by friends, family, colleagues, and neighbours will have differing effects on the expectation of knowledge transfer between individuals, as well as issues of trust (Harrison et al., 1997).

This chapter begins with a brief review of the definition of informal venture capitalists, their demographics, the nature of their professional backgrounds and some of the taxonomies that have been developed to attempt to classify them. The next section explores market and

industry level factors by discussing the presence of private information and the resulting asymmetries, the equity gap experienced by entrepreneurs at certain stages and sectors of their firms' development, and demand and supply side issues. The third major section reviews the process of venture capital investing from both the formal and informal aspects of venture capital. The last major section reviews the performance of informal venture capital investments as measured by rates of return. A conclusion closes the chapter.

2.2 Informal Venture Capital

This section reviews some of the descriptive studies of informal venture capitalists and their investments. This section first reviews the variation in definitions that prevail in the field and then moves on to investigate demographics, wealth, investments, education and professions. The inclination for former entrepreneurs to become angels is explored. A review of other typologies that have been developed using a variety of criteria follows. This section allows for an understanding of the profile of business angels in order to progress to a more theoretically grounded discussion in the following sections.

2.2.1 Definitions

Definitions differ as to the qualities that define an 'angel.' These differences are based on the type of finance provided (i.e. equity, or debt and equity), and the relationship between the informal investor and the entrepreneur (i.e. family and/or friends). For example, Aram (1989) includes individuals who loan debt as well as take equity. While Harr, Starr and MacMillan (1988) and Stevenson, Roberts and Grousbeck (1985) include family and friends, Wetzel and Seymour (1981) exclude family and friends from their definition. In practice, some defining features are more difficult to measure than others. For example, it is rather straight forward to distinguish family from non-family, but rather harder to distinguish friends from neighbours, members of your rugby team from acquaintances, and colleagues from business associates. Fiet (1996) was the first to raise an appreciation for the subtleties of differentiating between a

friend and a business acquaintance. An argument can be made for including friends in business angel population definitions since social relationships are known to facilitate co-operation between formal venture capitalists and entrepreneurs (Bygrave and Timmons 1992; Rea 1989; Steir and Greenwood 1995), and the same may hold true for informal venture capitalists. Upton and Petty (2000) argue that the increasing numbers of business successions that will take place in the upcoming decade warrant inclusion of family related-venture capital financial transactions in the venture capital literature.

The study of informal investors began in earnest in 1981 with the publication of a study of New England informal investors by the U.S. Small Business Administration (Seymour & Wetzel, 1981). This was soon followed by anecdotal references to informal investment (Wetzel, 1983b) and other studies in the U.S. (Tymes and Krasner, 1983) patterned on the Seymour and Wetzel (1981) work. Together, they helped launch a large number of location-specific studies which experimented with sample selections, described informal investors' preferences, actions and habits, and the nature of their investments. These earlier studies helped to point out the similarities which existed amongst the group of informal investors, from one coast to another, who were filling the void left by the movement of formal venture capital to later-stage projects.

Profiles and investment characteristics of UK angels have been examined extensively by Mason and Harrison (1990), and to a lesser extent by van Osnabrugge (1998b) and Stevenson and Coveney (1994). Wetzel (1983a), Tymes and Krasner (1983), Neiswander (1985), Gaston and Bell (1985), Aram (1987), Harr, Starr and MacMillan (1988), Postma and Sullivan (1990) have examined angels from the US perspective. A broad nation-wide study was also conducted in Canada (Riding, Cin, Duxbury, Haines, & Safrata, 1993). Subsequently, studies devoted to regional or national profiles have been conducted in countries such as Sweden (Landstrom, 1993), Norway (Reitan & Sorheim, 2000), Singapore (Hindle & Lee, 2002), Japan (Tashiro, 1999), Finland (Lumme, Mason, & Suomi, 1998) and Australia (Hindle & Wenban, 1999).

Business angels are predominantly between the ages of 45 and 64, although younger angels have been reported (Harrison & Mason, 2005). They are typically male. Studies that report the presence of female angels indicate fewer than five percent females (Harrison & Mason, 2005). A small number of studies have identified women in slightly larger proportions (Mason & Harrison, 2001a; Paul, Whittam, & Johnston, 2003; Farrell, 1998). During the decade of the 1990s, when most of the UK and North American studies were completed, angels were relatively wealthy individuals. Angels surveyed in the UK had a net worth of approximately £312,000 (Mason and Harrison, 1991), one-third were millionaires (Stevenson and Coveney, 1994), and in the US and Canada, selected samples averaged well over \$1 million in their respective currencies (Aram, 1989; Riding, Cin, Duxbury, Haines and Safrata 1994). U.S. and Canadian incomes were generally in excess of \$100,000 US (Aram 1989; Riding et al. 1994; Harr, Starr and MacMillan, 1988). Smaller incomes were reported in the UK (£46,000) (Mason and Harrison, 1991). Swedish angels reported average incomes in excess of \$90,000 US (Landstrom, 1993).

There is a very high level of undergraduate and post graduate education amongst angels. Aram's (1989) Great Lakes angels have the largest percentage of higher education with 82 percent indicating at least an undergraduate degree. Seventy-four percent of UK angels (Mason and Harrison 1991), and 69 percent of the Canadians (Riding et al. 1994) had undergraduate degrees. Finnish angels have the highest levels of education attained with 56 percent reporting a masters' degree and eight percent with a doctorate (Lumme et al., 1998).

Informal investors generally report that they expect to make slightly less than one informal investment per year (Aram, 1989; Harr et al., 1988; Landstrom, 1993; Mason, Harrison, & Chaloner, 1991; Riding et al., 1993; Stevenson & Coveney, 1994). Only Tymes and Krasner's (1983) California group expected to make five per year for the following two years. The earlier timing on the Tymes and Krasner study may account for the large variation in their results, or the nature of the demographics of California and its investment community.

Discrepancies of estimates of investment amounts arise from convenience sampling. In the UK, more than half of all investments were less than £10,000 (Mason et al., 1991), but were later estimated to be at least four times that amount (Stevenson and Coveney 1994).

Canadians estimate investing \$126,000 over five years (Riding et al. 1993) and in the US, the averages vary from \$18,000 (Tymes and Krasner 1983), to \$48,766 (Aram 1989), to the category of \$50,000 - \$99,999 (Harr et al. 1988). Fifty-one percent of Swedish angels' investments are less than \$91,000 US, but 28 percent were greater than \$182,000 US (Landstrom, 1993).

The percentages, means and amounts from the studies noted above reflect varying time periods, locations and methodologies. Variations over decades have seen significant increases in estimates as more effort has been made to identify angels. Some locales with large and active venture capital communities are recognised to be more mature in their understanding regarding private equity, high risk financing (such as Texas, Massachusetts, California, Ottawa, London). Care has to be exercised when making comparisons with less venture capital intensive areas (such as Tennessee, Scotland, and Atlantic Canada). More importantly, all the summaries reported here are derived from non-random samples making it difficult to generalise results and compare studies. Variations in samples are suspected as the explanation for highly variable results, particularly where samples are drawn entirely from angel network databases (Mason & Harrison, 1997a). The types of angels drawn to specific networks or BISs may be expected to vary considerably from one region to another depending on the makeup of the group and its direction.

2.2.2 Entrepreneurial Backgrounds

Many angels often cite entrepreneurial experiences as part of their personal history. The presence of this group as a substantial cohort amongst angels makes this demographic an

important feature upon which to focus. As will be reviewed in this section, entreprenering angels often take leadership roles and may therefore play a role which is proportionately larger what than their investments may imply. Entrepreneurs' venturing experience predisposes some individuals to invest in other peoples' companies. Landstrom and Politis (2000) propose that entrepreneurs pass through three phases to become business angels. Initially, entrepreneurial incubation takes place during their early corporate careers whereupon they become entrepreneurs, then after the transition to being an entrepreneur, the investment stage manifests itself.

Eighteen percent of the active participants in Stevenson and Coveney's (1994) study were classified as 'entrepreneurial angels,' and some 'virgin' and 'latent' angels also possess entrepreneurial backgrounds. In a previous UK study, 75 percent of sampled angels had started a venture and two-thirds of those were multiple venture founders (Harrison & Mason, 1991). Another UK study had 80 percent of business angel participants having engaged in starting a small firm (Van Osnabrugge, 1998b). In Scandinavia, two-thirds of Swedish angels were owner/business managers and almost half had started more than five businesses (Landstrom, 1993). Finnish angels demonstrate an extremely high percentage of entrepreneurial activity; 95 percent of a small, non-random sample had been a part of starting a company and the median number of companies started was five (Lumme et al., 1996). New York-area respondents demonstrated much less proclivity towards self-employment -- in the order of five percent (Harr et al., 1988) however a sizeable proportion of doctors, dentists, accountants and lawyers identified themselves by their profession rather than as self-employed. A much broader population of candidates were used in Harr et al.'s (1988) study than those previously noted.

Many of the assertions made above are based on percentages of respondents in a sample with no statistical inferences or confidence levels reported. As referred to previously, the use of snowball samples, convenience samples, and BANs and BISs can produce unknown biases.

These biases are deviations in sample means for which there is no way to predict the direction of the deviation. This topic is addressed in further detail in Chapter 5. Suffice it to say, however, that the European and US findings are highly variable in both method and results, yet there is abundant evidence of entrepreneurial behaviour in the backgrounds of informal investors.

Angels who have entrepreneurial backgrounds tend to exhibit an independent and leadership-type role based on their stage of investment, investment frequency, and search and referral habits. Entrepreneurial angels are more likely to invest in early-stage firms (Seymour and Wetzel, 1981; Sullivan, 1991; Gaston, 1989), to make a greater number of investments than non-entrepreneurial angels (Sullivan, 1991; Van Osnabrugge, 1998a), and expect lower rates of return than their non-entrepreneurial counterparts (Sullivan, 1991). Former or current entrepreneurs are much more likely to be the lead or independent investors by conducting their own searches, making their own decisions, making suggestions to others, and not soliciting suggestions or taking as many referrals (Sullivan, 1991). The propensity for entrepreneurial angels to identify with their investees, and to invest more frequently (than non-entrepreneurial angels) in earlier stage ventures while expecting lower returns suggests that entrepreneurial angels behave less like their formal venture capital colleagues in some important ways.

The predominance of entrepreneurship as a distinct characteristic is not the only quality that scholars have used to create taxonomies. Studies have attempted to identify other qualities in numbers large enough to distinguish various types of angels. These have resulted in a variety of taxonomies which are discussed next.

2.2.3 Taxonomies

The variety of backgrounds (professional, entrepreneurial, managerial), investment preferences (high tech, manufacturing, business services), investment activity, competencies, and motives (wealth maximisation, income generation, fun and satisfaction) indicate the heterogeneity of angels. It was reasoned that knowledge of these differences could be used by entrepreneurs to target specific angels in order to locate them (Coveney, Moore, & Nahapiet, 1996). Some classification systems (Gaston, 1989; Sorheim & Landstrom, 2001; Stevenson & Coveney, 1994; Gaston, 1989; Stevenson and Coveney, 1994) grouped angels on the basis of large proportions of distinguishing characteristics amongst the participants (taxonomies) and others used theoretically driven typologies. Gaston's (1989) taxonomy included 10 types of US angel: devils, godfathers, peers, cousin Randy, Dr. Kildare, corporate achievers, Daddy Warbucks, high-tech angels, stockholders, and very hungry angels. Stevenson and Coveney's (1994) six types of angels included the virgin, latent, wealth maximising, entrepreneur, income seeking and corporate angels. These were loosely based on the angels' wealth, investment amounts, investment frequency, their motives and the geographic area where they preferred to invest. As titles given to observed frequencies amongst the samples, these are considered taxonomies.

On the other hand, Sullivan (1996) developed a typology based primarily on the nature of business angels' deal generation behaviours. The four-category typology included independent investors (like to receive referrals), lead investors (conduct their own investigations and like to refer), group investors (invest as a group) and referred investors (invest based on referrals from others with little of their own investigation). Using the same typology, Argentinian investors were almost three times as likely to be independent investors (i.e. conduct their own investigation and receive referrals) as any of the other three categories (Pereiro, 2001).

Sorheim and Landstrom (2001) developed a categorisation using investment activity and competence resulting in four categories: lotto investors (low activity and low competence),

traders (high activity, low competence), analytical investors (low activity, high competence) and pure business angels (high activity, high competence). Although the use of competence by Sorheim and Landstrom moves away from simple demographic-type criteria, their implication that only those who are active and competent are ‘real,’ or pure, business angels is an evaluative judgement that clouds their claim. Their inferences about what practices constitute real angel investing are presumptuous particularly at this early stage of angel research. The identification of meaningful dissimilarities amongst angels should not exclude participants. A young field of research is better served by inductive methods of definition, whereby angels are classified by the nature of their activities rather than scholarly prescribed evaluative judgements (of who or what is a pure business angel).

Following this review of the qualities that have been used to define business angels to date, a review of the field from both the industry level and the firm level will take place. The discussions that take place in both of these sections are theoretically based. The theory of information asymmetry is an important concept in finance and is used widely throughout the remainder of the study. Therefore, before going on to Sections 2.4 and 2.5, a brief review of the nature of information asymmetries describes its important role in private equity finance. It is to this that we turn next.

2.3 Information Asymmetries

Variables that influence the informal venture capital industry and marketplace arise from the existence of private information. Because business angels often invest in smaller, or more early-stage entrepreneurial firms, challenges posed by private information and the resulting information asymmetries are amplified. This section examines the roles that private information, agency theory and information asymmetry play in the uncertainty associated with financing decisions. Informational discrepancies between entrepreneurs and investors

and the uncertainty associated with entrepreneurial payoffs lead to the provision of equity capital that favours some sectors and stages of finance, while leaving others with gaps.

2.3.1 Agency Theory and the Creation of Private Information

There is not one common definition of entrepreneurs or entrepreneurship, but Amit, Glosten and Muller (1993b) refer to it as “the process of extracting profits from new, unique, and valuable combinations of resources in an uncertain and ambiguous environment” (p. 816). They go on to refer to the stage between the firm’s inception and its initial public offering (IPO) -- whereupon the firm is publicly traded – as the entrepreneurial phase. The presence of the latter distinction highlights the importance that financing decisions have on entrepreneurial progress. Entrepreneurial preferences for sources of finance are motivated by cost, autonomy and control and are explained by the pecking order hypothesis (Myers, 1984a). The pecking order hypothesis describes managers’ (entrepreneurs’) preferences for financing projects using internal equity (in the form of earnings or personal sources) rather than outside equity. However, when forced to use outside sources of finance, entrepreneurs will prefer to use debt rather than equity (assuming costs are equal) so they do not have to relinquish shares to outsiders (Binks, Ennew, & Reed, 1990; Howorth, 2001). Thus, when many entrepreneurs begin their quest for outside equity, they have often exhausted other avenues for finance and are forced to consider outside forms of private equity².

It is at the junction where entrepreneurs need to finance their firms with outside sources of funds, that agency issues arise. Agency theory describes the situations that arise when the ownership and control of firms are separated (Jensen & Meckling, 1976). When entrepreneurs and managers are the same person, there is decision alignment so that decisions in the best interests of the manager are in the best interests of the owner. However, as the

² Gompers and Lerner (1998) observed that when bank rates were high in the early 1980s, demand for debt and equity venture capital commitments both declined suggesting that periods of extreme interest rates for debt may cause individuals to postpone altogether the larger initiatives that require considerable capital injections.

firm evolves and more people and equity holders become part of the firm, entrepreneurs -- who formerly held all of the equity -- now are only partial holders of equity alongside of investors. This is referred to as the separation of ownership and control. At this point, the potential for entrepreneurs (agents) to engage in actions that are not in the best interests of other investors (principals) exists to the extent that investors have financed the firm. Any expenditures made by the agent now only represent a portion of the cost to him/her. Thus, as the firm devolves from an operation wholly owned by the entrepreneur to an operation that is owned by the entrepreneurs and other investors, entrepreneurs have an incentive to engage in actions that are dangerous to the firm, or to act in a self-interest seeking manner.

The separation of ownership and control presents a situation that is ripe for the cultivation of private information -- that is, information known to the entrepreneur, but not to the investor. The private information may be regarding products, markets, other business prospects, or the entrepreneurs' moral fortitude, integrity, or industriousness (Fiet, 1996). The presence of private information which is hard to observe, or which is deliberately withheld, is referred to as information asymmetry³.

Relationships between entrepreneurs and their potential investors are characterised by asymmetry of information when the sellers of equity have more information about the venture and its potential than the investors. Quoted companies have very specific accounting information requirements such as filings required by securities exchanges, up-to-the-minute prices of transactions, and analysis from the industry's thousands of securities analysts. These requirements and the information they present all combine to reduce information asymmetries. As firms grow and managements add more employees and professionals, the information generating systems within the firm increase the firms' ability to provide timely and accurate accountings of activities (Wright & Robbie, 1996).

³ Research into family-owned and -managed firms indicates that developments espoused by agency theory do not unfold as predicted because family-owned and -managed firms must contend with the conflicting concept of altruism (Schulze, Lubatkin, & Dino, 2003).

In smaller firms, personal communication or inadequate information systems can be the cause of even greater asymmetries as poorer information and accounting systems are unavailable to create necessary documentation and analyses for investors. Entrepreneurs in unquoted companies have much more information about their ventures than potential or actual investors and may intentionally, or unintentionally, withhold information. The absent information that drives the asymmetries observed in investor/investee relationships may be product, market, demand, operating, or competitive information.

When information asymmetry causes ineffective investment decisions on behalf of the investor, or self-serving entrepreneurial actions that cannot be easily observed by the investor, adverse selection and moral hazard have been engaged. In an entrepreneurial context, the uncertainty associated with entrepreneurial success is tied to the principals' inability, *ex ante*, to determine the abilities and effort that the entrepreneurial agent will devote to developing the firm (Amit, Glosten, & Muller, 1990b). The varying qualities of suppliers (of equity), when indistinguishable to buyers (of equity), can cause buyers to make poor decisions. Bad investment decisions that result from information imbalances are referred to as adverse selection (Akerlof, 1970). Specialised investigations during the appraisal process reduce asymmetries (Lerner, 1998) and are attempts to reduce the probability of adverse selection.

Moral hazard is the existence of private information and information asymmetries which make it difficult for investors to observe entrepreneurs' abilities, and to gauge whether they are applying themselves to the tasks using all of their facility. With outside investment funds in the firm, costs to the entrepreneur (agent) are less than they were (in the situation that existed prior to the investor's introduction to the firm) because the costs are now shared by both principals and agents. Thus, agents may be inclined to partake of frivolous expenditures because they are purchased in part by the investor. Moral hazard is acknowledged by the investors' inability to ascertain the entrepreneurs' abilities to combine and deploy assets that

find market acceptance and are executed fast enough to render competitive advantage (Amit, Glosten, & Muller, 1990a). This, and other types of self-interest seeking behaviour may be difficult for the principal to observe. Moral hazard problems reflect the principals' understanding that the success of the venture is highly dependent on the entrepreneurs' efforts and decisions and reflects their moral integrity (Amit et al., 1993b).

2.4 Industry and Market Perspectives

Discrepancies in information between business angels, between angels and entrepreneurs, and between angels and outside buyers have implications for the industry which affect how entrepreneurs search for capital and the consequent demand. This section discusses these issues. As an equity gap emerges, so do peculiarities regarding the supply of entrepreneurial finance and its demand by entrepreneurs. Therefore, structural issues such as investment incentives, capital gains rates and various tax regimes which impact on supply are also discussed.

2.4.1 Equity Gap

Financing entrepreneurial activities is central to entrepreneurial development and growth, however, the agency and information asymmetry issues noted in the previous section complicate financing decisions. The degree of asymmetry is exacerbated when associated with long-term investments in high-risk ventures (Dixon, 1991a) such as those associated with entrepreneurial ventures because entrepreneurial activities embody uncertainty for which there are no known probabilities of the possible outcomes (Knight, 1921; Knight, 1933). The more uncertain the probable outcomes, the greater the cost of capital associated with a project. Thus, the difficulty for financiers to correctly assess entrepreneurs' abilities and their efforts to cultivate the firm has resulted in a specialised class of finance for entrepreneurs who choose to involve outsiders who are prepared to participate in new venture formation (Amit et al., 1990b). Formal venture capitalists possess specialised skills to overcome the information

asymmetries and uncertainty associated with entrepreneurial finance (Wright & Robbie, 1998). These specialised skills include appraisal of entrepreneurs' abilities, assessment of their efforts by contracting and monitoring, recognising the various stages of financial commitment and providing financial advice and support.

The equity gap refers to a shortage of professional forms of funding, principally during the seed, start-up and early-stages of entrepreneurial firm development (Mason & Harrison, 1993a) where formal venture capital is theoretically suited for investment. Those in search of funding at values typically avoided by formal venture capitalists are operating in the equity gap. The values vary from country and timing of the perspective. For example, in 2000, van Osnabrugge estimated the equity gap to be less than \$500,000 or £400,000 (2000), whereas in 2003, Sohl (2003) indicated investees seeking less than \$2 million to be operating in the equity gap. It is in this financing range that informal venture capital has been instrumental.

In 2002, the European Venture Capital Association reported that only 10 percent of formal venture capital went to seed and start-up projects (*Preliminary Annual Survey*, 2003). Sixty-five percent of all private equity activity went to buy-outs, 23 percent to expansion capital and 2 percent to replacement capital – a total of 90 percent. In the UK start-up finance and other early stage investments totalled 7.2 percent of the total distributions of £6.7 billion. More than half of all investments were to expansion stage firms (BVCA, 2004). With start-ups representing 5.2 percent, this has not changed appreciably since Murray (Murray, 1994) reported start-up percentages of 3.0 percent in 1992. In the US, later-stage distributions and expansion capital have dominated investments for several years including a marked shift in 2003 where early-stage investments of \$3.3 billion represent 18 percent of the industry's total disbursements (Venture Economics, 2004).

The equity gap varies by national and regional boundaries as well as differing sectors. For example, the trends reported above for the UK, Europe and the US do not apply to Canada.

Although the overall distributions declined by 41 percent (from \$2.5 billion Cdn in 2002 to \$1.5 billion in 2003), early-stage firms received 44 and 51 percent of the total disbursements from all corporate, government, labour sponsored, private independent, institutional and foreign sources of formal venture capital for 2002 and 2003 respectively (Macdonald & Associates, 2004). Regarding sectors, the early-stage funding of NTBFs has been particularly problematic in the UK because of the highly specialised needs of entrepreneurial technology firms (Murray & Lott, 1995), although more recently there is evidence of significant improvements regarding attitudes towards NTBFs by both generalist and specialist funds (Lockett et al., 2002).

A number of reasons explain the movement of capital away from early-stage financings including improved efficiencies, fewer risks, improved returns, and increasingly steep hurdle rates of return. Firstly, the costs associated with due diligence and professional management make it uneconomical for formal venture capital firms to pursue and invest in seed, start-up and early stage deals that are in need of small amounts of capital (Tyebjee & Bruno, 1984). The efficiency of larger project selection is related to the amount of time and effort that venture capital fund managers expend on the selection, due diligence and monitoring of small projects, compared to large projects. Since the demands are the same, smaller projects are deemed uneconomical, and the trend towards increasing fund sizes requires larger financings in order to meet fund objectives. The tendency towards larger projects leaves a preponderance of smaller financing requests without finance.

Second, the risks inherent in early-stage, less developed companies are difficult to measure and more unpredictable because of uncertainties in estimating future performance based on previous performance. The standard measures for large-firm performance, calculating financial ratios and comparing them with industry results, are not reliable for unlisted companies (Vos, 1992).

Third, the inherent uncertainty causes venture capital funds to experience large numbers of failures and poor producing investments. The large number of losses force venture capital funds to raise rates of return required of investees (Binks and Vale, 1990). Improvements in venture capitalists' investee selection record would permit venture capital firms to suffice with lower hurdle rates of return allowing more projects to exceed the funding benchmarks. Currently, only a very small proportion of ventures are funded (Upton & Petty, 2000).

Lastly, and related to the increased uncertainty inherent in smaller firms, is that larger unquoted companies produce better returns (Wright & Robbie, 1996). Over the past 20 years, management buy-outs and expansion capital have produced the best returns. The annualised pooled internal rate of return (IRR) for the European Venture Capital Association's MBOs from 1980 to 2002 exceeds venture capital equity by almost three percentage points at 14.2 percent (*Preliminary long term returns*, 2003). The difference is further inflated when compared with early-stage investment's pooled IRRs for the same period of 5.1 percent.

These four factors coalesce to produce the equity gap which has been long-established⁴ in the UK and was particularly highlighted in the US in 1981 (Seymour & Wetzel, 1981). The venture capital industry's gravitation to later-stage projects, fed by higher profits, reduced risk and improved efficiencies, is viewed by some venture capitalists as an industry-wide failure because the industry is no longer encouraging, nor developing new entrepreneurial companies (Murray, 1991). However, given the poor returns to early-stage investments and negative informational environments during the 1980s (Amit et al., 1990a; Sahlman, 1990), Lockett, Murray and Wright (2002) suggest that it was a 'rational' move, at least for UK firms, to gravitate to "a specialist competence in the financial engineering of later-stage investments" (p. 1021).

⁴ Lockett, Murray and Wright (2002) and Harrison and Mason (1996) outline the history of the recognition of the equity gap in the UK going back as far as 1931.

2.4.2 The Widening of the Equity Gap

Worse still for small firms, is that the equity gap may be widening as the movement away from early-stage investments (Murray, 1999) strengthens as a consequence of increasing average investment and fund sizes (Mason & Harrison, 1997b). Given the large size of today's funds, even the smallest distributions for early-stage investments are sometimes larger than seed or start-up firms can usefully employ (Sohl, 2003). In the UK, the average start-up received £400,000 (BVCA, 2004). The average distribution per investee in Canada in 2003 was \$ Cdn 2.16 million (Macdonald & Associates, 2004). In Canada, one early-stage firm recently received an investment of \$Cdn 20 million which further strengthens the argument of a widening equity gap. Clearly, there are investees in the market for capital whose needs will not require such substantial initial investments.

Explanations for the equity gap's widening relate principally to the ever-increasing size of funds and the related increases in the average size of deals. A combination of market forces at the industry level have led to increases in the provision of venture capital over the past decades. In the UK, funds raised by independents rose from £4.8 billion in 1993 to £7.8 billion in 2002 (BVCA, 2004). In the US, total funds raised annually have increased from \$6.3 billion in 1995 (PricewaterhouseCoopers, 2002) to its 2003 level of \$18.2 billion (Venture Economics, 2004). These trends mask unprecedented spikes in funds under management to \$89.8 billion in 2000 in the US and £13.6 billion in 2001 in the UK prior to the collapse of the dot.com and tech supply sectors (PricewaterhouseCoopers, 2002).

Larger funds induce venture capitalists to put larger amounts into each investee by financing larger, later-stage firms which manage larger blocks of finance and syndicate less (Gompers & Lerner, 2001). Rather than increasing substantially the number of financings, large fund managers prefer to keep the number of financings stable and to increase the amounts

distributed to each investee. Entrepreneurial prospects need to be able to effectively utilise large distributions or risk being seen as too small for the large funds. Another explanation for the growing equity gap is an issue of demand which is based on indications that there are fewer good early-stage prospects available for investment generating an increasing competition for deals. Competition for investees within geographic regions drives prices up (particularly Massachusetts and California) substantially influencing the size of venture capital deals transacted (Gompers & Lerner, 2001).

As the formal venture capitalists move more and more towards larger financings with the presence of larger funds, the range of the equity gap increases to include to so-called second equity gap. The second equity gap has been depicted as that which is below \$5 million (Sohl, 2003) – a range of investment not typically serviced by business angels. Some case studies of angel alliances, groups of angels, and networks indicate that some collective actions can be helpful in the second equity gap (Payne & Macarty, 2002) though financings of this size are not their usual domain.

2.4.3 Informal Investors Fill Some of Equity Gap

Formal venture capital is not likely to be a solution to the equity gap because of the growing size of funds, the size of their distributions, and their gravitation towards merchant banking. In addition, formal venture capital is primarily motivated by large capital gains which preclude the moderate-growth company (Harrison & Mason, 1996). The formal venture capital industry's lack of interest in early-stage projects along with the inappropriateness of bank loans for such firms has sparked research interest in equity gaps that develop for specific sectors and stages of entrepreneurial development (Lockett et al., 2002; Murray, 1994, 1999; Sohl, 2003).

Informal investors are one of the groups that collectively invest large sums into investees whose financing needs are situated amidst the equity gap (Mason & Harrison, 2001a).

Informal investors are more involved in the early stages of finance because they make smaller investments, and they represent more rounds of finance than the formal venture capital industry (Freear and Wetzel, 1990a) although it is recognised that some business angels finance later-stage deals as well (Mason, 2002; Mason & Harrison, 2002). Business angels are positioned to address the equity gap because the size of their investments are in the range necessary, angels are geographically dispersed so they have the capacity to invest throughout a region, angels bring experience and contacts to expanding firms, and the total supply of informal venture capital is estimated to be larger than the supply of formal venture capital (Harrison & Mason, 1996).

Because business angels' investments are in companies not normally preferred by formal venture capital, informal and formal venture capital are more complementary than competitive as the entrepreneurs and enterprises to whom they cater represent largely differing needs in terms of funds provision and stage of venture development (Freear & Wetzel, 1990; Harrison & Mason, 2000). Other areas that represent a potential for complementarity are co-investment amongst business angels and venture capitalists, and deal generation by mutual referring (Harrison & Mason, 2000). Complementarity does not always benefit angels, however. Exit opportunities available to angels via formal venture capital investments (dealt with in detail later) have not been especially profitable for angels. Larger venture capital partners who come to invest after the angel, generally substantially dilute angels' shares and they assume the more powerful role in the relationship (Murray, 1994).

Issues relating to the equity gap and the manner in which business angels can help reduce it, have been focussed on increasing the supply and efficiency of informal venture capital, as well as improving the demand. Supply-side arguments are dominated by government interventions to increase supply and indications that business angels have considerable funds

yet un-invested. Demand-side arguments generally focus on reluctant entrepreneurs and a lack of viable opportunities as reported by business angels. The demand and supply-side schema has been employed by a number of studies at the formal venture capital market level (Gompers et al., 1998; Lockett et al., 2002) and the informal level informal level (Harrison & Mason, 1991; Sohl, 2003). The industry and market issues are organised using this schema and are addressed in the following two sub-sections.

2.4.4 Supply-Side Issues

Varying degrees of access to informants and separate pools of funds cause fragmentation in the supply of venture capital (Fiet, 1996). Thus separate pools of equity exist for entrepreneurial projects. If similar information were available to all private equity suppliers, they would all bid on the same deals creating one marketplace, a situation that does not exist. Thus, the fractious information availability causes fragmentation in the industry with different groups specialising in various levels of entrepreneurial finance. This makes the larger industry difficult to manage

The supply of formal venture capital is the desire for investors to invest in venture capital funds (Gompers et al., 1998) which are then invested in entrepreneurial firms. In informal venture capital, the supply is comprised of the angels who invest directly in entrepreneurial firms. Informal investment supply does not have an intermediary function and thus, initiatives designed to influence supply may have a more immediate effect on informal venture capital than has been seen in some of the formal literature. The supply side of the informal venture capital industry is characterised by information asymmetries, inefficiencies, fragmentation, and an industry that is less concentrated and oligopolistic than the formal venture capital industry

Some angels want to be anonymous (Harr et al., 1988), and in some cases, indicate little need or desire for matchmaking services or outside formal intervention. The sparse transference of information between entrepreneurs and investors, and amongst business angels yields an inefficient capital market (Sohl, 2003). At the industry level, there is little incentive for professional investors such as venture capital firms and institutional investors to manage small investments because of transaction economies and returns that are not in keeping with the risks (Harrison & Mason, 1991). Amongst angel investors, there is little information exchange and no public information about the number, quality and price of informal venture capital transactions. Furthermore, the presence of uncertainty *ex ante* about the quality of projects acts to reduce the size of the market overall (Akerlof, 1970). This situation implies that more, or better, BANs or public information are needed to reduce industry- and firm-level informational asymmetries.

Despite this fragmentation and free entry into the marketplace, Hyytinen and Toivanen (2003) theorise that the structure of the industry for formal venture capital is relatively concentrated given conditions of information asymmetry because the range of unknown entrepreneurial quality creates endogenous barriers to entry. In their model, formal venture capitalists do not have the pricing flexibility to price deals at their average quality, thereby undermining their profitability which creates informal barriers to entry. Under similar environmental conditions, however, the business angel industry is much less concentrated because of fewer barriers to entry. The profits and shares requested by angels (their deal pricing) can adjust to the average quality of ventures demonstrating a flexibility in pricing that deters barriers to entry.

The formal industry has oligopolistic tendencies because industry participants require cooperation and networking for deal flow and syndication. In a dynamic model, alliances between cooperating syndication partners requires trust (Wright and Lockett, 2003). Because later cooperation may be required, a commitment not to free-ride on others' information

gathering is implicit in order to remain in good standing in the industry (Anand & Galetovic, 2000). Free-riding would limit a competitor's ability to cooperate later reducing their overall competitiveness. The self-enforcing cooperative behaviour required serves to limit the size of the industry. As regards angels, however, although some angels cooperate and share information, it is well recognised that many angels are lone individuals who invest with no co-operation or consultation with others. Thus, the business angel industry can grow to limits beyond that of formal venture capital.

The willingness of individuals to invest is expected to respond to the expected rate of return on investments (Gompers et al., 1998). If information is widely available, high rates of return on investments increase the supply as investors are drawn to the asset class and low rates of return would be expected to discourage business angels from the asset class. That information is not available publicly. It is widely reported that angels have substantial amounts of capital still available for investment (Riding et al., 1993) because of a lack of sufficient good proposals in which to invest. This excess represents supply. To calculate the amount of informal equity available for placement requires an estimate of the amount of active angel investment and the distribution or number of angels who do invest, as well as those interested in investing. Small variations in any of a number of variables would significantly alter the estimate, so it is difficult to accurately estimate the amount of supply available.

Policy manipulations have implications for the supply of informal venture capital (Harrison & Mason, 1996; Mason & Harrison, 2000a; 2000b; Wetzel, 1983a). Policies encouraging informal venture capital investment are likely to be part of a larger, and broader, integrated approach to solving the equity gap (Harvey, 1995). The principal interventions by policy-makers have been in manipulating taxes to incentivise angels and to develop BISs to reduce inefficiencies in matching supply with demand, both of which are considered in the following two sub-sections.

Tax Manipulation

Manipulating tax regimes and improving economic conditions are two key areas that have an impact on angels' decisions to invest more frequently (Mason & Harrison, 2001a).

Historically, for amounts invested in unquoted companies, the manipulation of tax regimes includes creating incentives to diversify portfolios, lowering capital gains taxes, increasing front-end tax relief, and lowering dividend taxes. All of these work by effectively lowering the threshold rate of return expected by investors.

The supply effect of a tax regime that encourages investors to diversify their portfolios (such as the prudent man rule in the US) (Gompers et al., 1998) was significant for formal venture capital because institutional investors were prevented from doing so legislatively. The effect of relaxing the prudent man rule requirements on informal investors would be expected to have been less noticeable since informal investors were not prohibited from diversifying their portfolios.

The supply effect of reductions in capital gains taxes for informal venture capital investors is likely to be great because business angels' gains are taxable. A reduction in capital gains rates would improve angels' rates of return and therefore the expected supply of capital. The success orientation of capital gains tax relief programs incentivises the firm and the angels to build a successful firm and a profitable exit because additional gains are not acquired until capital gains are realised. This is contrary to front-end relief where the incentive is realised quickly (when the investment is made) and then dissipates. However, attempts to empirically validate the importance of capital gains tax rates for formal venture capital consistently produced negative coefficients in regressions (Gompers et al., 1998) which may be explained by the largely tax-exempt institutions that support formal venture capital. Their tax exempt status reduces the effect that capital gains reductions would have on the threshold rate of

return required for investment (Gompers et al., 1998). Thus, more dramatic supply effects would be expected for similar interventions for informal venture capital.

There is little evidence that front-end investment tax-incentive programs work. Front-end tax-incentive programs (such as the Business Expansion Scheme and the Enterprise Investment Scheme in the UK) have been less successful (than exit-oriented capital gains relief programs) and they distort risk return profiles (Harrison & Mason, 1996). In Canada, a review of labour-sponsored venture capital funds (which include a significant initial tax exemption) charges the labour funds with driving other competitive venture capital firms out of the market (Cummings & MacIntosh, 2004).

Cultivation of Business Angel Networks (BAN) and Business Introduction Services (BIS)

In some circles, the merits of encouraging additional supply is questioned due to the largely unprofessional and often poor decision-making represented by angels (Lerner, 1998). These objections question the merits of encouraging additional supply in an asset class where large losses are experienced by many. An alternative may reside in attempting to make the present supply more efficient. Thus, the other major policy initiative to address supply has been the introduction and proliferation of BANs and BISs⁵ in the UK and US particularly. BANs reduce inefficiencies by providing for angels to meet one another and learn market information and BISs facilitate the exchange of information between entrepreneurs and angels (Harrison & Mason, 1996). Thus, the development of commercial or not-for-profit BANs and BISs provide improved visibility in addition to access to data and improved information (Mason & Harrison, 1997b). In addition to the funds, BIS investees gain the commercial or

⁵ Early literature referred to groups of angels as ‘business introduction services’ because they were initiatives designed to overcome inefficiencies in the marketplace for entrepreneurs by reducing invisibility of angels, reducing search costs, and creating channels of communication (Mason & Harrison, 1993b; Mason & Harrison, 1994a). By 1996, general use of the term ‘business angel network’ was prevalent (Harrison & Mason, 1996). Though the terms are now used synonymously, this thesis adopts slightly different interpretations of the two terms. Business introduction services refer to agencies designed for introducing entrepreneurs to angels and reducing inefficiencies, whereas business angel networks refer to groups of angels whose purpose is to learn from, communicate with one another and suggest co-investing opportunities. The latter are more focussed on the angel.

investment benefits of meeting new contacts, the hands-on involvement of their angels, leveraging additional funds from banks and about half will acquire follow-on finance from their angels (Mason & Harrison, 1996).

In response to equity gap issues, a number of pilot, technical assistance, and micro loan programs were established for a variety of specialised groups, but did not adequately address the problem which would be better solved by equity solutions (Acs & Tarpley, 1998). The presence of BANs can contribute to angel investment in areas where equity gap needs are greatest. An early analysis of the activities of some of the first commercial and not-for-profit BANs in the UK indicated that the median deal size was £50,000, half the deals were in start-up and other early-stages (although seed investments were rare), and investments in technology-based firms, industrial manufacturing, consumer manufacturing and services were quite evenly distributed (Mason & Harrison, 1997b). The concentration of formal venture capital both spatially and by type of firm takes place “at the expense of peripheral, economically lagging, regions” (p. 111). BANs can counteract that effect, however, because regional benefits are achieved because BAN’s locations influence where deals are transacted (Mason & Harrison, 1997b).

In the UK, assessments indicated that the first three-year effort at promoting BANs produced a supply of angel capital in excess of £25 million. The efficacy is difficult to assess because of long time frames to investment fruition, collaboration which often produces double-counting, incentives to not report in cases where fees are involved, and offers which are rejected by entrepreneurs (Harrison & Mason, 1996). Yet, in cases where assessments of such programs have been attempted, approximately £3 million was matched with 70 investments over a three-year trial in the mid-1990s in the UK. A similar review of a Canadian pilot project reported on the variety of different methods used to initiate matches (*The Winning Formula at Work: Investment Facilitation Techniques*, 2002). To the extent that demand

meets supply by the activities of BISs or BANs, they draw supply to the equity gap that otherwise may have been placed in other asset classes.

2.4.5 Demand-Side Issues

As governments attempt to develop policies to encourage and cultivate informal investment – merits aside (Lerner, 1998) – the amount of unmet investor supply suggests a lack of demand. The prevalence of BANs in the UK and the US has not been able to offer a complete solution for the equity gap since significant numbers of investors in the UK report that membership in BANs has had a limited impact on the number of investment opportunities to which they are exposed (Mason & Harrison, 1994b). This draws the demand for informal venture capital into the equity gap issue.

Four types of demand characterise the demand-side of the equity gap issue: current demand, reluctant demand, potential demand and unmet demand. Each of these is influenced by the number of investees that can provide the expected rate of return at a particular level of supply (Gompers et al., 1998). Thus, as the expected rate of return desired by suppliers increases, the number of firms that can provide that return declines as fewer firms are able to pass the rate of return threshold.

Current demand are those amounts (of informal venture capital) that are currently invested in entrepreneurial opportunities (Gompers et al., 1998). They are current because they have already been demanded and supplied. Estimates of current investment are principally conducted by rudimentary methods of estimation since BISs are the primary method of surveying business angels. Earliest first estimates in the US suggested an annual placement of \$15 - \$30 million in the New England area alone (Seymour & Wetzel, 1981) versus Gaston's estimated \$55 billion in the US in more than 700,000 firms (1989). Coveney, Moore and Nahapiet's (1996) 389 angels indicate placements in excess of £100,000 for an

estimate of British informal investment market of £10 billion. More recently, Mason and Harrison (2000b) reviewed and critiqued the methods and assumptions used in previous efforts and proposed a new method using BAN memberships as the “tip of the iceberg” of the angel population. They developed a range of £0.5 billion to £2 billion in angel investment in the UK varying with the assumptions used. This method depends heavily on knowing the proportion of angels in the population that join BANs which can be problematic, but also does not assist in estimations for populations where no BANs exist. With a sample representative of new firm incorporations, Farrell (1998) calculated an estimate of \$85 million per annum in the sparsely populated eastern region of Canada.

The second element of the demand-side of the dilemma is characterised by a surfeit of reluctant entrepreneurs – those who would prefer not to seek equity finance (Harrison & Mason, 1991). As referred to earlier during discussions regarding the pecking order of finance, venture capital is not generally entrepreneurs’ first preference due to the high cost of the capital and the requirement to relinquish equity (Binks et al., 1990). However, companies that employ venture capital are more likely to have robust expectations, greater optimism for the future, and are more international in their orientations than companies that have not had access to venture capital (Freear, Sohl, & Wetzel, 1991) and there is no shortage of firms seeking venture capital despite the costs.

Anecdotal evidence corroborates the pecking order hypothesis whereby large proportions of businesses do not take advantage of referrals to BANs by banks (Mason & Harrison, 2001a), and where cultural predispositions against equity finance disincline entrepreneurs to seek equity capital (Forton, 1996). Whereas equity is not entrepreneurs’ first preference for finance, education is necessary to inform small and expanding businesses of the benefits of equity (Mason & Harrison, 2001a).

The third category of demand, potential demand, is that which may materialise given changes in existing legislation and other interventions by policy-makers. When government intervention leads to lower costs to market for entrepreneurs, more entrepreneurs, innovations, and start-ups will enter the market place (Keuschnigg & Nielsen, 2001). More entrepreneurs with fewer costs (better capabilities such as better training and infrastructure) has the indirect effect of increasing the number of venture capital companies, improving venture capital profits, and strengthening the venture financing industry overall. Using Keuschnigg and Nielsen's analysis, more government intervention may serve to improve entrepreneurial options (demand) available to informal venture capitalists, however, the results would be highly dependent on the angels' participation in the firm, since the provision of managerial advice is an important element of the model. Interventions at this level may address the business angels' lament that entrepreneurs do not conceive sufficient investment proposals possessing the criteria desired by angels, nor do their entrepreneurial managements often inspire angel collaboration (Riding et al., 1993). Furthermore, delivering sustainable demand-side benefits is a medium to long-run objective and policy makers should avoid the temptation to provide short-sighted supply-side policies (Queen, 2002). Policy directives should be aimed at building workforce skills, training and advice, and small amounts of start-up funding for those who wish to start businesses.

Reductions in capital gains taxes have a demand-side effect by making it more attractive for entrepreneurs and managers to commence operation of their own firms (Poterba, 1989). Whereas managers are paid with salaries that are taxed at higher levels, entrepreneurs are often paid with gains in firm value which – because they are taxed at a lower rate -- would cause an increase in the quantity of quality entrepreneurs available. Blair and Hellmann (Gompers et al., 1998) note that R&D spending has the potential to have a significant effect on demand creation in a demand and supply equation, and they suggest that it has the potential to be a powerful policy oriented demand-creation tool because significant R&D spending is financed by federal and state (in the US) governments.

The last type of demand, unmet demand, characterises projects that are un-funded. Despite the intervention of business angels, there are still an abundance of un-funded projects (Harrison & Mason, 1991). There are no estimates of how many good proposals go un-funded, but theories of adverse selection suggest that formal venture capitalists price their deals so high that they lose the best entrepreneurs in the process (Amit et al., 1990a). If informal venture capitalists price their deals lower than formal venture capitalists, then they may have exposure to a greater number of high quality deals first. However, more than half of the angels belonging to BANs had failed to invest in deals they desired due to an inability to complete terms and conditions with the entrepreneurs (Mason & Harrison, 2001a). In a previous study, angels had made four times as many offers than those that had been accepted (Mason & Harrison, 1996).

Our lack of knowledge about business angels and their potential role in an integrated approach to solving the equity gap requires that we develop a better understanding of angels (Harvey, 1995) from a perspective that goes beyond descriptives of their demographics and investment profiles and history. This section has reviewed the industry and market level concerns the existence of private information and its effect on the provision of equity capital. The presence of an equity gap was examined from the perspective of the ability of the informal venture capital industry to fill the gap. In addition, industry elements that affect the supply and demand for informal venture capital were reviewed. The next section moves to understand the phenomena of informal venture capital from the effects that private information and the associated informational asymmetries have at the firm level. The firm level analysis reveals the individual activities in which business angels engage in the conduct of their investments

2.5 Firm Level Perspectives - Stages of Informal Investment

The previous three sections have highlighted the emergence of understanding about informal investors, the theory behind the gravitation of private capital to more mature projects resulting in an equity gap, and market and industry perspectives related to supply and demand of formal and informal venture capital. This section compares the theoretical and evidentiary foundations of the stages of formal venture capital with what is known and what might be expected regarding informal venture capital. While it is certainly not an exhaustive outline of the former, the comparison attempts to inform the latter and provide insights into business angels' decision-making practices (Prasad, Bruton, & Vozikis, 2000).

The resolution of informational asymmetries has implications for the nature of the investing process at the firm level in two important ways and is highlighted in the remainder of this chapter. Firstly, the decision-making process is an extended course of action by venture capitalists intended to reduce asymmetries with potential entrepreneurs. Though the balance of asymmetry of information changes at various stages of the process, the deal generation, screening, due diligence, negotiation and monitoring phases are all attempts to keep adequate and accurate information in the hands of all partners. Secondly, the presence of asymmetries of information presents agency problems when agents are charged with the task of controlling operations in the best interests of the principals. The lengthy list of agency concerns takes on interesting dimensions as regards formal venture capital because they are agents to their funds providers (the principals), as well as being the principals to their investees (the agents).

Business angels, on the other hand, do not have this dual agency role.

The venture capital process is used to structure the remainder of the chapter. A variety of different models have been proposed regarding the informal and formal industry. The business angel investment process model proposed by Haines, Madill and Riding (2003) includes a decision-making stage after the negotiations to account for business angels' expectations that they can change their minds following potentially protracted negotiations

with entrepreneurs. Structuring and valuation are subsumed under negotiations in this model of the informal process. Mason and Harrison (1996) note that differing numbers and types of rejection decision criteria emerge at different stages of the investment process. The venture capital process used here is a model similar to that used by Wright and Robbie (1998) in their review of the formal and informal venture capital literature. Their summary of the investment process was a compilation of a number of analyses conducted previously (Bygrave & Timmons, 1992; Fried & Hisrich, 1994; Tyebjee & Bruno, 1984). Gompers and Lerner (2001) refer to a “venture cycle” which includes the initial fund raising by the venture capitalist and their search for additional funds after a cycle of investment. Since business angels invest their own funds, this stage of their venture cycle is not applicable, although some implications of Gompers and Lerner’s (2001) model, as regards the behaviour of formal venture capitalists, are applied where appropriate. The preference for Wright and Robbie’s (1998) model provides a theoretically robust model of the venture capital process which subsumes a number of other studies. The following sections review deal generation, screening and selection, valuation and due diligence, structuring and negotiation, post contractual involvement, investment realisation, and performance.

2.5.1 Deal Generation

Formal venture capitalists need to ensure an adequate numbers of projects with suitable entry prices to permit their funds to generate specified target rates of return. Therefore, deal flow is a significant part of formal venture capitalists’ activities though it has received little research attention (Wright & Robbie, 1998). Issues are raised regarding how to find opportunities, or how opportunities find them, assessing hurdle rates of return, and on what and whom to rely for information (Wright & Robbie, 1996).

One of a number of routines adopted to reduce informational asymmetries during the deal generation stage is the analysis and review of a large number of investment opportunities. As

agents for limited partner principals (Sahlman, 1990), formal venture capitalists develop reputations and demonstrate their capability by generating secure sources of promising ventures which act as a signal of quality to their principals (limited partners). Having a larger pool from which to select means venture capitalists improve the probability of obtaining access to proposals that are in high growth industries, industries in which the firm has previous experience, or industries and investment stages which match the funds' objectives. More skilful venture capitalists will have superior sources for deals (Amit et al., 1998) which can expose venture capitalists to opportunities to produce superior returns. Thus, improving one's personal and professional network of contacts promotes deal referral thereby improving agents' reputation capital and subsequent potential for future syndication (Lockett & Wright, 2001) and fund raising capacity.

Deals that do not meet formal venture capitalists' objectives are often referred to other agents. This information dissemination functions to reduce risk by sharing information about technology, markets and entrepreneurs, thus promoting an oligopolistic industry (Keuschnigg & Nielsen, 2001) requiring cooperation. The flow of information and cooperation between venture capitalists augments market efficiencies and reduces opportunism by firms (free-riding).

Trust facilitates cooperative activity smoothing the deal generation process (Harrison et al., 1997). Co-operative activity, consultation and information exchange precipitates trust between venture capitalists who interact frequently with one other (Fiet, 1995a). Future cooperative funding possibilities may exist with other formal venture capital firms because information and risk sharing is common and encouraged in their industry (Keuschnigg & Nielsen, 2001). As a result, venture capitalists with good industry connections can expect to receive referrals that will already have been screened and met the initial criteria of principals in other firms. The endorsement of other firms is viewed as a warranty of sorts, and therefore, venture capitalists prefer referrals to unsolicited manuscripts (Sweeting, 1991). In-

depth exploratory case studies have shown that formal venture capital firms will reconsider a previously rejected deal if brought to them by a respected lead venture capitalist (Steier & Greenwood, 1995).

The deal generation activities of business angels differ from those of formal venture capitalists due to qualities associated with information asymmetry, agency theory, agency risk and the acquisition of specific information. Angels do not have the dual principal-agent role of formal venture capitalists (they are the principals) and have no one to whom signalling their competence is required (Van Osnabrugge, 1998b). Because angels are known to generate less deal flow than formal venture capitalists and are less selective in their initial screening (Van Osnabrugge, 2000), they may be less concerned about the selection, security of, and reputation effects of their investment decisions. Nor do these principals have to concern themselves with concerns regarding future fund raising (they are the funds providers). Their ability to produce returns to meet fund objectives only exists to the extent that they desire to attain personal objectives (such as motivations). The presence of networks, or syndicates, of angels might mitigate their insensitivity to deal generation practices because of the need to act on behalf of, or represent, the interests of other angels who may behave similarly to limited partners.

Second, the flows of information that dominate informal venture capital are relatively inefficient, even compared to formal venture capital (Gaston & Bell, 1988; Tymes & Krasner, 1983) and thus, information sources are not as frequent or as reliable as for formal venture capital (Fiet, 1995a) or in quoted equity markets. The implications for deal generation are enormous as frequent, accurate information allows angels to have an improved pool of opportunities from which to select in addition to providing pricing information. These conditions amplify the potential for adverse selection.

Third, the predominant deal generation concerns relate to agency risks. Market risks dominate formal venture capital concerns (Fiet, 1993) which can lead to the use of different types of informants (Fiet, 1995a) as well as the type of information that is sought and used regarding entrepreneurs. The predominance of agency concerns by business angels means their focus is dominated by the selection of entrepreneurs (rather than deals) who shields them from these risks.

Lastly, the structural dimension of social capital theory indicates that access, timing and referrals to information are important to deal generation (Sorheim, 2003) which vary from business angels to formal venture capitalists. Business angels have less experience in the use of industry and expert information than formal venture capitalists (Fiet, 1991a) and they abbreviate the frequency with which they contact informants (Fiet, 1996). Tending towards domains of knowledge with which they are familiar may account for their interest in selecting deals in sectors where they have previous experience, knowledge, or background. Van Osnabrugge (1998a) attributes the inclination towards familiar industries as part of the serial angels' inclination towards reducing market risks as compared to non-serial angels inclination to reduce agency risks.

Although the variances between formal and informal venture capitalists are numerous at this stage of the venture process, there exist complementarities between the two that encourage prosperity and growth of both sectors of the private capital industry (Harrison & Mason, 2000). The referral of deals from formal to informal venture capitalists is relatively common in Britain and occurs when the deal is too small, needs specific expertise, or if the deal does not fit fund objectives.

Empirical Evidence

Despite the theoretical and empirical importance of the deal generation stage to the venture capital decision-making process, some studies examining the decision-making process, or

investment cycle, fail to review the deal generation stage (see for example Gompers & Lerner, 2001 and Van Osnabrugge, 1998b).

Formal venture capitalists actively seek and solicit deals, and can receive and review as many as 1000 proposals a year from interested entrepreneurs (Fiet, 1991a; Sahlman, 1990). Even formal venture capitalists that specialise in smaller deals are reported to review hundreds of proposals annually (Boocock & Woods, 1997). Their search for proposals is generally widely known in the entrepreneurial and financial communities. Formal venture capitalists maintain a public presence with professional investors and fund managers, are members of venture capital associations, are listed in published guides, phone books, and directories, as well they rely on formal and informal relationships with informants to advise them about prospective deals (Fiet, 1991a).

Reviewing large numbers of proposals provides venture capitalists with the best possible range of opportunities from which to select. Given valid selection criteria, angels should be able to mitigate inadequate information by engaging in active and passive deal generation that would increase the number of business plans available for review. However, information flows between entrepreneurs and angels are often poorly developed creating market inefficiencies (Gaston, 1989; Seymour & Wetzel, 1981; Tymes & Krasner, 1983) despite co-investing (Fiet, 1995b).

There is a large variation in the number of proposals reviewed by angels depending on the study, the time period and the location. Early US work indicates angels review two or three proposals a year (Seymour and Wetzel, 1981). One-quarter of a Swedish sample viewed less than five proposals and one-quarter of the sample viewed more than 25 proposals (Landstrom, 1993). In Argentina, angels review 10 proposals a year and invest in one (Pereiro, 2001). Coveney et al.'s (1996) angels viewed 40 proposals annually and invest in five percent of those reviewed. The average annual number of proposals seen by respondents in Harrison and Mason (1992) study

was 10. A notable exception are Dutch angels who specialise in takeovers and turnarounds; they report reviewing between 100 and 150 proposals per year (Visser & Williams, 2001).

In some countries (BIS) and (BAN) have been developed to attempt to reduce these inefficiencies⁶. In the U.K., the British Venture Capital Association lists BANs and BISs (Mason, 2002), but public sources of information about informal investors are not as readily available in the US and Canada. Furthermore, angels exacerbate the inefficiency with efforts to remain 'invisible' so they will not be deluged with business proposals by eager entrepreneurs (Harr et al., 1988). From the demand perspective, entrepreneurs indicate they have difficulties finding informal investors in their search for capital (Wetzel, 1983a). It is often the entrepreneurs' resourcefulness that brings angels and entrepreneurs together. This resourcefulness may be useful if entrepreneurs target those that they believe can add industry contacts and knowledge as well as finance (Saetre, 2003) providing a higher value-added angel.

Chiefly, the inefficiencies noted earlier are manifest in a population that is largely invisible, who base their decisions on the information from friends and associates, who end up reviewing very few deals, and who have high acceptance rates because of their limited perusals. Interestingly, angels generally express a preference to see more proposals (Landstrom, 1993; Riding et al., 1993). It is an unsolved contradiction that angels want to protect their invisibility (Seymour & Wetzel, 1981), but generally express a desire to see more proposals (Riding et al., 1993). There are strong indications, as noted in the demand and supply discussion earlier, that they would invest more often if they could find sufficiently attractive deals (Gaston & Bell, 1988).

⁶ Although information flows are lacking, informal referral activity and syndication are so common that industry fragmentation and inefficiencies may not be as prevalent as previously thought (Riding et al., 1993).

Acceptance rates vary considerably as well. The differences in acceptance rates between UK studies and North American studies imply business angels are more selective in UK capital markets. UK studies demonstrate an acceptance rate of six percent, or 128 deals out of approximately 2000 proposals for 63 respondents (Mason et al., 1991) whereas US studies demonstrate an acceptance rate of 22 percent, 896 deals based on 4000 proposals and 435 respondents (Gaston, 1989). Because the number of proposals reviewed by business angels is disquietingly small, the acceptance rates are greater than that of formal venture capital firms which have acceptance rates that range from one to three percent (Dixon, 1991a). In the Netherlands, Dutch turnaround and takeover angels have acceptance rates of between 1 and 5 percent (Visser & Williams, 2001). The greater numbers of proposals circulating in the U.K. suggests better efficiency of information, but lower funding rates suggest either a larger equity gap or more discriminating investors.

Referrals and Informants: The number of proposals that angels review will, in part, be determined by the deal generation activities in which angels engage, and until recently, this has been largely manifest as referrals (the deals passed from another individual) from informants (the individuals who pass possible opportunities along). Informants are personal friends, business acquaintances and professionals who informally disseminate information about possible opportunities and whom angels rely on for information (Fiet, 1995a). For informal venture capitalists, formal venture capital firms can serve as informants.

Referrals from business associates and friends dominate deal generation sources followed by direct approaches from entrepreneurs (Gaston, 1989). Friends and family far exceed other sources of referrals in some studies (Coveney et al., 1996). In the UK about 13 percent of deals resulted from the efforts of BISs (Coveney et al., 1996). Despite popular thinking, referrals from accountants, bankers, legal advisors and stockbrokers are rare and less effective (Gaston, 1989; Harrison and Mason, 1992). Seventy percent of Canadian angels regularly refer entrepreneurial proposals to other investors (Riding et al., 1993). Nonetheless, opportunities to

play the informant role are limited because of the few opportunities investigated by angels (Seymour and Wetzel, 1981; Wetzel, 1986).

The amount of co-operative activity and consultation which takes place between formal venture capitalists and business angels is limited (Fiet, 1995a). This is not unique to the informal market, however, since some formal venture capital funds which specialise in early-stage investment do not have much co-operative activity and consultation with their more amply-funded, development venture capitalists either -- particularly where it relates to deal flow and follow-on financing (Murray, 1994). Angels tend to limit their contact to the informal informant network (Fiet, 1995b) which is largely composed of friends and acquaintances (Gaston & Bell, 1988; Wetzel, 1983a) (not close business colleagues). The closer the personal relationship between the angel and the referrer, the more likely an angel is to invest in a deal (Harr et al., 1988).

Referrals from friends, family, associates and BISs represent passive types of deal generation. Because business angels are active, engaged and successful individuals, one would expect at least some deliberate search activities on their behalf. Harrison and Mason (1992) were the first to note a pro-active approach in U.K. investors though pro-active methods were rarely used (Mason & Harrison, 1994b). Canadian angels reported personal active search as a key method of finding proposals (Riding et al., 1993). The nature of deal generation activities requires more investigation as the detail underlying the terms 'pro-active' and 'personal active search' have yet to be revealed.

Business Introduction Services and Business Angel Networks: Functional market places have buyers, sellers and an exchange mechanism whereby information about transaction volume, price and quality flows in both directions. By creating a marketplace, the improved information flow creates better efficiency of information that promotes better distribution of new venture proposals, more selection for informal investors and ultimately improved

valuation of opportunities. Where opportunities are more efficiently valued the cost of capital decreases, IRRs improve and more deals occur addressing both demand and supply sides of the informal venture capital issue. The existence of a market place does not ensure every good venture is funded, or that every venture funded is good, but it reduces the costs for searches for proposals.

BISs have been introduced in many markets to improve markets for angels to buy and sell unquoted securities. BANs ostensibly provide an exchange of information between informal investment equity buyers and sellers in an attempt to create a more functional marketplace. They are public or private agencies that provide a formal network of access (introductions) for venture proposals between angels (who are often known only to the BAN organisers) and entrepreneurs. The funding sources for BANs vary. Some local and government initiatives are funded wholly by public sources while private services and some public BISs charge commissions, fees, and subscription rates (Riding, 1992). They are a conduit to pass information between the entrepreneurs and informal investors in a variety of ways such as private meetings, bulletins, newsletters and seminars.

The focus or objectives of BANs differ as well. Some BANs add to their matchmaking role by providing business plan advice and consultation for entrepreneurs though this is contentious since evaluations may raise expectations of interested investors who see such an inclusion as an inherent endorsement (Mason and Harrison, 1990). Some attempt to match capital seekers with investors' whose pre-stated objectives match deal characteristics (Riding 1992). Still others support more of an educational objective whereby angels' skills are enhanced (Prowse, 1998). Others argue that some BANs suffer by being non-selective in the ventures they advance (Wetzel, 1986a; Wetzel, 1986b)⁷. Anecdotal evidence points to a suspicion of entrepreneurs who are forwarded by BANs because of the perception that the

⁷ The US model Venture Capital Network solicits and profiles opportunities and uses pre-established criteria to present the opportunity to investors; in effect, they are screening opportunities and the investors to whom the information is introduced (Wetzel, 1986).

candidate must be a low-ability entrepreneurs because they could not find funding from acquaintances and family first (Harrison et al., 1997).

The large number of publicly sponsored BANs in the U.K. has prompted interest in their usefulness. A recent review of 22 of the National Business Angel's Network's BANs for the one-year period ending in June, 2001 indicated that £30 million had been invested by 346 business angels into 217 investments (Mason, 2002). The number of pounds sterling invested was a six-percent increase over the previous year. For the Local Investment Networking Company (LINC), 37 percent of responding entrepreneurs reported receiving some of the financing they had sought and 7 percent received all the financing they needed (Mason and Harrison, 1993).

Two early noteworthy Canadian BANs had very little success. The federally operated Canada Opportunities Investment Network (COIN) program showed spectacularly poor results and reviews from subscribers and investees at a cost of \$900,000 (Riding, 1992). The Investment Opportunities Project (IOP) in Canada was funded by a federal government regional development agency and operated on a budget of \$375,000 per year for two years (Riding, 1992). The IOP identified 48 angels in their area, 16 of whom had used the service. Only 23 capital seekers used the matchmaking service and three groups raised the capital they sought. More recently in Canada, best practices were sought from 23 matchmaking sites established across the country (*The Winning Formula at Work: Investment Facilitation Techniques*, 2002). Varying degrees of success were achieved using a variety of methods of facilitation though none appear to have achieved the size or recognition of the British model.

Summary

Business angels are receptive to non-professional sources of information and have more limited informant networks than formal venture capitalists. Generally, they review few

proposals. As a result of their shortcomings in deal search, business angels have a high acceptance rate of proposals reviewed to proposals invested. The combination of these two factors may mean that angels are not investing in deals in which they have industry or functional experience.

The formal venture capital industry solves the informational gap by providing specialist investors to overcome asymmetries and inefficiencies. The dilemma posed by the informal market place, however, is much more dire. In the informal venture capital market place, the informational difficulties to overcome are greater so there is a considerable need for professionalism, but the gap is met with the more amateur efforts of business angels. Recently, however, some inefficiencies have been met by the network of BANS creating a more “formal” informal network in the US (de Noble, 2001) and in the UK.

The policy reaction to the informational inefficiencies at the deal generation stage is to support the development of BANs, although only a limited number of angels participate in them. There are questions as whether BANS improve the quality, quantity and efficiency of the information because there are reports that the number of deals to which angels say they have been exposed does not appreciably improve with the introduction of BANs (Mason & Harrison, 2001a). Others question the public policy emphasis of supporting matchmaking services for a market that “places a premium on previous knowledge of the entrepreneur” (Prowse, 1998, p. 791). If angels’ lack financial and venture capital acumen, it promotes adverse selection concerns (Lerner, 1998) contributing to an inability to protect themselves in the contracts they write (Prowse, 1998) (thus promoting moral hazard concerns).

Furthermore, if there are only a limited number of worthy projects in any market place, a surge of available funds would result in a decrease in overall industry returns (Gompers & Lerner, 2001) possibly affecting the expectations of business angels who are currently in the market compared with those who would compete for deals via a BAN.

There has been little systematic investigation regarding deal generation in locations where where BANs do not exist, or where public policy has not supported their development. In such locales, business angels generate deals without the aid of any established network of informants or similarly minded group. The deal generation activities of these angels may vary considerably because the informant and collegial network are not as specialised or expert compared to where syndicates and networks encourage passing deals around. For these angels, improved deal generation techniques may lead to a greater variety of better investment opportunities which may further influence repeat investment behaviour.

2.5.2 Screening and Selection

Venture capital funds have screening procedures and selection criteria that serve to define procedures and control activities. In their role as agents, general partners' screening procedures provide the bases for determining which proposals meet fund objectives for industry, technology, venture capitalist experience, or stage of finance, and which proposals merit further review. Each process produces documentation of the decision-making which general partners need to justify their decisions and protect them from unhappy limited partners. The existence of such procedures and documentation improves the flow of information between principals and agents and reduces the potential for conflict due to misunderstandings and poor communication. Criteria against which to measure the objectives of a fund may be explicitly stated, and financial information, related sensitivity analyses, accounting information, and personal and subjective information required for project decisions (Wright & Robbie, 1996).

Venture capitalists are deal selection specialists who have a comparative advantage over other investors regarding reducing the costs of informational asymmetries (Amit et al., 1998). They use their screening and selection criteria to reduce the bulk of proposals and act as a threshold for more elaborate evaluations (Tyebjee & Bruno, 1984). Screening and initial criteria prevent

principals from spending too many resources (time and talent) on reviewing proposals that will not be funded -- thus diverting their attention from current investees where resources may be more profitably spent. Principals quickly de-select proposals that are in industries or sectors that have too many asymmetries (Amit et al., 1998), low-growth markets, or limited up-side potential. Issues of market risk dominate venture capitalists concerns (Fiet, 1991a) as they increasingly rely on equity ratchets, contractual performance clauses and boilerplate clauses to distance themselves from entrepreneurs if necessary.

The significant market inefficiencies to which angels are exposed causes them to rely on information from less trusted individuals exposing them to opportunism (Fiet, 1995a). The market inefficiencies makes it more difficult for angels to find deals, and in order to widen their access to find deals, they may use less trusted informants. Their preference for agency risk also implies that they would gather different types of information relying heavily on the selection of the entrepreneur to limit the angel's exposure to market risk (Fiet, 1991a).

Angels need to trust their entrepreneurs (Harrison et al., 1997). Ultimately, angels have fewer contractual controls than (formal venture capitalists) so their need for trust has to be higher (than for formal venture capitalists) (Shepherd & Zacharakis, 2001). Angels bestow trust when they perceive highly competent entrepreneurs and informants, few concerns about economic considerations, low down side risks and a high assessment of upside potential (Harrison et al., 1997). Their requirement to select angels they trust (in the absence of considerable contracting) may cause their motivations and selection criteria to be more flexible, permitting appraisal selections based on entrepreneurial assessments rather than strict financial, industry, sector, or stage criteria. This may also manifest itself as a preference to invest in industries in which they have experience so they can add value to the firm.

As was observed in the previous section, business angels are not as visible as formal venture capitalists, nor do they receive the same number of business proposals annually. Thus,

screening may actually be counter-productive in light of their desire to see more proposals. If their selection criteria were explicit, it would further limit the number of proposals to which they are exposed. They likely have no need for formal objectives nor documentation in light of their limited fiduciary responsibilities to others. On the other hand, as non-professionals, they likely have significant other demands on their time and resources, and may have little time to devote to the limited number of proposals or referrals they do receive.

Evidence

In practice, the array of criteria used for screening and selection in formal venture capital display a “disturbing lack of common structure ... demonstrates the heterogeneity in the practices of different venture capital firms” (Tyebjee & Bruno, 1984, p. 1065). The degree of protection from competition and market demand are the best predictors of success in venture capital-backed firms (MacMillan, Zemann, & Subbanarasimha, 1987), however, venture capitalists’ espoused selection and profitability criteria can be different than those that they actually put to use (Shepherd, 1999). Criteria have been shown to include novelty and viability, track records, and the likelihood of high returns and exit (Fried & Hisrich, 1994), focus on the entrepreneur’s personality and experience (Amit et al., 1990a; Bruno & Tyebjee, 1985; Dixon, 1991; MacMillan, Zemann, & SubbaNarasimha, 1985), and IRRs of at least 46 percent for early-stage venture capitalists (Wright & Robbie, 1996). Some firms selected deals which offered ‘reasonable’ teams, financials, and product market characteristics even though the deals did not meet the firm’s overall objectives (Muzyka, Birley, & Leleux, 1996).

More recently, the focus of screening research in formal venture capital has gravitated away from specific criteria used towards understanding the decision-making processes. It is felt that understanding decision-making processes is a better way of understanding venture capitalists’ selections. There is evidence that venture capitalists use current strategic management concepts to help formulate their decisions (Shepherd, 1999), although they are reluctant to use decision models (which may improve venture selection) because of

misperceptions about the accuracy of the models in conjunction with their need to outperform other venture capitalists, and misperceptions about their own introspection (Shepherd & Zacharakis, 2002). Using a verbal protocol, Zacharakis and Meyer (1992) found that venture capitalists spend more time examining product related information during the business plan screening stage and are more likely to assess the entrepreneurial team during personal meetings at the due diligence and valuation stages. The finding that the presence of the heuristic overconfidence is prevalent amongst venture capitalists has implications for the manners in which decisions are made, but perhaps more importantly, implications for the manner in how they learn from previous mistakes (Zacharakis & Shepherd, 2001).

Little attention has been devoted to angels' attempts to screen proposals received since their focus is generally on generating more and higher quality proposals. Generalisable knowledge about investment criteria is also scant (Seymour & Wetzel, 1981; Tymes & Krasner, 1983). The principle criteria for most angels focus on the impressions of the founder/manager, the angels' experience/understanding of the sector (Haines et al., 2003; Stevenson & Coveney, 1994), the product or technology, and the value that the angel can bring to the project (Haines et al., 2003). Qualitative analysis suggests that criteria (for investment) arise from motivations (of the individual) which included making "substantial non-financial contributions to the firms in which they invested" (Haines et al., 2003, p. 22). The mixture of motivations and criteria suggests that business angels are not screening investments for what they can do for the investor, but rather screening investments by what the investor can do for the investment. From a performance standpoint, management's ability to manage the venture and a demonstrated market demand for the product were the two most important performance criteria in Harr et al.'s (1988) replication of MacMillan, Siegel and SubbaNarasimha's (1987) earlier venture capital performance indicator study.

Angels' criteria for the stage of the deal vary. Most are very tolerant of investing in seed and early stage deals (Aram, 1989; Mason and Harrison, 1991; Landstrom, 1993; Tymes and

Krasner, 1983; Harr et al. 1988; Lumme et al. 1996; Stevenson, Moore and Nahapiet 1994; Freear, 1994). Entrepreneurial angels are more inclined to invest at earlier stages and they do not expect greater returns (Sullivan, 1991). A consistently substantial proportion of angels, however, indicate preferences for more established companies (Aram 14 percent; Mason and Harrison 18 percent; Landstrom 30 percent; Tymes and Krasner 14 percent) and show more willingness to invest as the stage of the venture deal progresses (Freear et al. 1994) even when losses are being reported on these supposedly less risky, later stage, syndicated deals (Kelly and Hay, 1996).

At times, angels are more articulate about what they do not prefer. The most common reasons for rejecting proposals are a lack of confidence in management, unsatisfactory risk/reward ratios, valuation differences (Harr et al., 1988; Seymour & Wetzel, 1981), insufficient market potential (Harr et al., 1988), the absence of well defined business plans, unfamiliarity with products processes or markets, and industry sectors that did not interest the investor (Seymour & Wetzel, 1981). Tax shelters and tax relief are not major criteria (Harr et al., 1988; Stevenson & Coveney, 1994; Tymes & Krasner, 1983).

Summary

The passive method of selection which angels often use for generating opportunities combined with an unsystematic method of screening and selection suggests that largely random events determine which opportunities angels finance (Harrison & Mason, 1991). Some of the key theoretical foundations about business angels' screening activities and criteria for investment have yet to be fully explored, and the expectation that they should operate similarly to venture capitalists prevails. However, because they are exposed to so few proposals, and though it has yet to be determined, their screening activities may be very different from those of formal venture capitalists.

Their criteria are not affected by agent responsibilities to funders and fund objectives as is the case with formal venture capitalists. As a result, their personal motivations, infused with their

criteria at the time of an investment, may drive their activities more than established, predetermined criteria.

2.5.3 Due Diligence and Valuation

Due diligence and valuation attempt to further reduce information asymmetries.

Entrepreneurs are tempted to withhold information because of technical information, intellectual property they do not want to share, hide information from opportunistic venture capitalists, or to improve valuations (Cable & Shane, 1997). Due diligence is fraught with issues of adverse selection because the process, in the absence of significant publicly available information, is an onerous activity. It is an investigation of historic and future data about the company, the product, the market and the industry. The due diligence process ascertains the venture's robustness in advance of making a valuation (Fried & Hisrich, 1994). The stage of the investee will have some bearing on the kind of information sought because of differing capabilities for making information available. Early-stage ventures' management may not yet have evolved to the stage where information systems are developed enough to produce the desired reports effectively (Wright & Robbie, 1996). This is more difficult in the case of a start-up.

The general partners' agency role in due diligence reduces informational asymmetry between themselves and their limited partners (the principals) by ensuring that limited partners' funds are invested in high potential investments. The temptation for unscrupulous or inept agents to renege on their due diligence responsibilities is diminished by their remuneration schedules which include fees as well as ownership of some of the firms' distributions at the end of the funds' terms.

The due diligence process may entail superior knowledge by way of a wide variety of contacts such as other venture capitalists and technical specialists who have additional

industry, technical or market information. Due diligence is part of the principals' specialist skills that permit them to attempt to earn large profits (Wright & Robbie, 1998). The presence of venture capital agents who conduct effective due diligence promote the continued viability of the industry (Amit et al., 1998). To the extent that there is sufficient incentive in ownership structures, general partners' expectations of future profits motivate them to conduct effective due diligence to the best of their abilities. General partners who are less capable at due diligence and valuation will have fewer successes and less reputation capital to invest in future fund raising activities.

The valuation is used, in part, to determine the capital structure to be negotiated. A valuation is determined by ascertaining whether the investees' activities, which have been validated as much as possible by due diligence, can generate an acceptable rate of return given the funds sought by the investee. As information becomes more scarce, valuations would be expected to vary (Wright & Robbie, 1996).

Business angels do not have intermediary-type fee structures that require splitting future profits which is necessary for dual agency, formal venture capitalists. Angels do not have a group of limited partners, nor do they have the agency concerns associated with the responsibility to such principals. Therefore, angels can expect to keep all the gains from their efforts (except where syndication exists). Therefore, in the presence of apt ability, their motivations for effective due diligence would be expected to be significant. Those unaware of the benefits or techniques of due diligence, or whose overconfidence is unwarranted, may not be capable of or aware of the necessity of a full search for information prior to the investment decision.

Angels rely on selecting high quality entrepreneurs to protect them from market and industry risks which are normally uncovered during the evaluation stage (Fiet, 1991b). A number of other factors may play a moderating role in their motivations to conduct due diligence such as

the percentage of shares expected by the angel, the amount of time they have to devote to such activities, and their non-professional status which may incline them to be less effective investigators. Where business angels are known to take smaller shares than formal venture capitalists (Van Osnabrugge, 1998b), their incentive to conduct due diligence may be proportionally less. They may also be prepared to devote fewer resources proportionally, to the exploration and discovery of asymmetry reducing information. Other commitments may cause angels to have less time to engage in such activities and the amount of time and effort expended may correlate to the proportion of the investment to their wealth (which may be insignificant). Additionally, as non-professionals, they do not employ specialist skills in investing, and they have a smaller network of technical specialists and other principals to call upon for support (Fiet, 1995a).

Valuation is more difficult in early stage ventures because of the lack of comparable information available about other firms that are at the same stage of firm development, market growth and with comparable product lines (Wright & Robbie, 1996). Angels, who have less exposure to accurate information about other investees, angels and their terms (due to the inefficient marketplace), will have valuations that are much more likely to vary. However, it might also be speculated that in difficult early-stage markets, where entrepreneurs find it difficult to raise venture capital, business angels' valuations will be highly negotiable.

Evidence

Venture capitalists use a compensatory process during due diligence and evaluation so that a deficiency in one area can be compensated for by admirable qualities in another (Riquelme & Rickards, 1992). Venture capitalists place higher importance on their own due diligence and valuation efforts than on independent marketing and accounting reports (Wright & Robbie, 1996) although Fiet (1991b) found that where market information is deemed important, venture capital firms have been shown to rely more heavily upon other venture capital firms due diligence than upon their own. Accountants' reports were very highly regarded in a small

sample of British respondents (Dixon, 1991). Managerial capabilities combined with environmental threats (protection from competition, economic cycles, obsolescence, and down-side risk) represent a significant portion of the risk associated with an investment even though venture capitalists do not attempt to conduct a calculation for risk (Tyebjee & Bruno, 1984).

Formal venture capitalists use price earnings ratio multiples, historic basis valuations, EBIT multiples, recent transaction prices, discounted cash flows (in that order) (Wright & Robbie, 1996) and IRRs for valuation calculations (Murray, 1991). In the UK, price/earnings multiples are more popular whereas EBIT multiples and recent transactions are more common in the US (Manigart et al., 2000). Formal venture capitalists in the Netherlands and Belgium tend towards discounted cash flows, France uses book values of net worth,, and the UK was found to use a combination of future earnings combines with price earnings ratios (Manigart, Wright, Robbie, Desbrieres, & Waele, 1997). Venture capitalists' own due diligence is foremost for valuation information for the US and the UK as well as business plans and financial statements (Manigart et al., 2000).

Compared to venture capital firms, it is less clear how business angels exercise due diligence and valuation. Informal methods of due diligence include reviews of financial statement and projections, meetings with the principals, and reference checks (Haines et al., 2003). Angels sampled from BANs conduct less due diligence than their formal counterparts including less sector research, fewer meetings with the entrepreneur, fewer independent references checked, and a less thorough review of the financials (Van Osnabrugge, 2000). For example, in a study of UK angels, the majority did not calculate the rate of return on investments they were considering and some angels only contacted one reference before investing compared to 4.2 contacts made by venture capitalists and angels made three inquiries whereas formal venture capitalists made at least four before investing (Van Osnabrugge, 1998b). Anecdotes from another study described angels who sought agency risk-type information (from other angels),

but boasted about not relying upon it (Fiet, 1991a). Notably, a small number of large-scale investors indicated having checklists, hiring assistants to check documentation, and conducting a search of other evidence not presented by the entrepreneur (Haines et al., 2003).

Techniques to reduce their exposure, such as investing in sectors in which they have previous knowledge or experience, is not a favoured approach by most business angels (Van Osnabrugge, 1998b), though some serials have more experience in the sectors in which they invest (Van Osnabrugge, 1998a). In one sample, only half the sample conducted any research into the sector at all (Van Osnabrugge, 1998b).

In the informal venture capital literature, references to valuation generally focus on the inability of the angel and the entrepreneur to come to an agreeable valuation (Haines et al., 2003; Mason & Harrison, 1995a). Qualitative evidence regarding valuation indicate that relative values of the various contributions and the difficulty in measuring them dominate the discussions (Haines et al., 2003). This implies that IRRs, multiples, and discounted cash flows are not priority measures used by angels. There is still a need to discern and collect data regarding the methods they use to estimate valuations and structuring options. Even recent, sweeping studies of informal investment fail to recognise this element of the investment life cycle (Haines et al., 2003).

Summary

Getting the capital is the foremost criteria for entrepreneurs seeking financing (Ehrlich, DeNoble, Moore, & Weaver, 1994) so entrepreneurs' inclinations to present information that favours the opportunities' appearances will be strong (Cable & Shane, 1997). It is surprising then, that business angels' due diligence is not more demanding of the investigations of entrepreneurs given the important role angels place upon entrepreneurs to shield them from market risk. The evidence that multiple-investment angels conduct more systematic due diligence hints at the nature of the differences between inexperienced and experienced

business angels. The void of any comprehensive examination of valuation may be symptomatic of the elementary manner by which business angels' decision-making is conducted.

2.5.4 Structuring and Negotiation

During the structuring and negotiating phase, general partners – working on behalf of principal limited partners -- determine and negotiate the proportion of future profits that both will share. The large losses that define some high risk investments require that hurdle rates of return on other portfolio investments be higher than would be normally expected for a particular risk status. The extent to which general partners identify with the profit sharing depends on the particular fee/share status ratio that the limited partners have negotiated with them. The balance between fee and share ownership that is characteristic of general partners' remuneration is a trade-off whereby principals' ownership decreases in favour of increasing general partners' ownership in order to provide adequate incentive for general partners to engage their best efforts on behalf of the principals. General partners' willingness to accept performance-based compensation schemes and limited life funding agreements signal their quality to principals (Sahlman, 1990).

When formal venture capitalists act in their capacity as principals, during the structuring and negotiation stage, the usual inequality of information is reversed. At this stage of the investment decision-making process, the general partners generally have more experience than do the investees. Venture capitalists know more about the pricing of investments as well as the market for funds, and have a greater knowledge of the probability whether investees will find future funds if turned down by the current venture capitalists. With this more detailed information, venture capitalists are able to exact the best equity and investment deals.

High discount rates (common for start-up and first stage ventures because of greater asymmetries) invoke perverse adverse selection phenomena (Plummer, 1987) because high discount rates discourage the most competent entrepreneurs, thereby driving them to other sources of capital. Hence, low ability entrepreneurs are more likely to accept venture capitalists' offers than high ability entrepreneurs (Amit et al., 1990a). This effect would be aggravated if venture capitalists are not able to sell high-quality entrepreneurs on the venture capitalists' ability to contribute value to the venture (Sahlman, 1990).

A chief method to alleviate adverse selection involves syndication which is common amongst venture capital firms. Theoretical foundations for syndication rely principally on the financial need to reduce risk by diversifying their portfolios by co-investing, as well as to ensure sharing and reciprocity within the industry with respect to deal generation (Lockett & Wright, 2001).

Formal venture capitalists protect themselves (and their limited partners) from future agency concerns by stringent contracting (Fiet, 1995a) which includes the development of control rights. The control held by formal venture capitalists is a function of a continuum of divisible rights negotiated and shared between venture capitalists and entrepreneurs. Because entrepreneurs derive some non-pecuniary benefits from operating a firm (that cannot be observed or verified), formal venture capitalists negotiate disproportionately large control rights (Kirilenko, 2001) compared to the amount of shares they own (Sahlman, 1990). Thus, formal venture capitalists (who are at an informational disadvantage regarding the venture and the entrepreneur) exercise their contractual and negotiating advantage to acquire considerable benefits regarding the nature of the financing, share valuation, and profit distribution that alleviate commitment and incentive concerns (Kirilenko, 2001).

Although business angels, as principals, need only to negotiate on their own behalf, they are exposed to more risk than formal venture capitalists because information asymmetries are

more pronounced. Since less biased information only becomes available after the investment is made (Lockett & Wright, 2001), business angels may have difficulties assessing risk classes and categories. Additionally, it is not clear that these principals have an informational advantage over their agents. In some cases, experienced angels may have structured and negotiated previous agreements which may be reused, or they have unrelated business experiences that facilitate their negotiating knowledge. However, it is unlikely that business angels know the market for deals, the probability for funding elsewhere, nor have a thorough understanding of recent prices.

Similar to cases of formal venture capital finance, high quality entrepreneurs are expected to signal their worth to business angels. These signals would have been demonstrated during the initial screening and interview stages. In situations where the entrepreneur has limited wealth, such as those characterised by angels' deals, entrepreneurs signal their worth by the proportion of their initial wealth that they are prepared to devote to the project (Prasad et al., 2000). Angels calculate their worth and importance as they structure and negotiate the deal.

Syndication, which may be expected to improve the risk associated with increased asymmetries encountered by angels, is hampered by market inefficiencies because angels are not privy to accurate industry-wide sources of information and data, and it is more difficult to find investment partners. Geographic locales where BANs are publicly known may be exceptions. Furthermore, business angels may be unaware of the losses that are probable. Angels may stand to lose more than they gain if the ratio of winners to losers is similar to that of formal venture capital because only a small proportion of business angels will ever make enough investments to permit the ratio of winners to losers to work in their favour.

Evidence

Structuring and negotiations requires investors to calculate risk, determine a level of co-investment, define the amount of funds they are prepared to offer the investee and when to distribute them, make an offer, negotiate an agreement, and enter into a contract.

The Role of Valuation & Risk in Structuring and Negotiation: Formal venture capital firms are guided by organisational policies regarding valuation calculations and target rate of return hurdles. Because decision-makers whose decisions will be reviewed by others are generally more risk averse than those who have decision autonomy (Tetlock & Boettger, 1994), venture capitalists (with limited partners to whom they are accountable) will be motivated to find ways to calculate valuations that reduce their risk exposure. Formal venture capital firms use several methods of valuation in order to check their own calculations, however, they are not observed to select valuation methods which produce the highest valuations (Wright & Robbie, 1996) -- an obvious effort to improve their equity holdings and promote the interests of their limited partners. An essential element of asset valuation is the calculation of risk. Venture capitalists conduct risk assessments using characteristics such as managerial capabilities, environmental threats (changes in the product market) (Tyebjee & Bruno, 1984; Wright & Robbie, 1996), and the expected time horizon to exit (Wright & Robbie, 1996). However, a large number of formal venture capitalists have indicated they do not conduct systematic risk analyses (Dixon, 1991).

Variations in expected rates of return are the manifestations of risk assessments. Proposed investments should meet specified rates of return based on deal-specific circumstances and when circumstances change the expected rate of return varies as compensation for more or less risk associated with a project (Wright & Robbie, 1996). Factors which affect expected rate of return considerations are market conditions (Tyebjee and Bruno, 1984; Wright and Robbie, 1996), the degree of product differentiation (Tyebjee & Bruno, 1984), the expected length of the investment (Dixon, 1991a; Wright & Robbie, 1996), general economic

conditions (Wright & Robbie, 1996), and stage of financing (Dixon, 1991a). Formal venture capitalists rate general financial conditions as an unimportant indicator which is surprising given venture capitalists requirement to maintain a differential between a fund's performance and the performance of other financial instruments (Wright and Robbie, 1996). Surprisingly, venture capitalists are often incapable of identifying a numeric rate of return expectation as a result of the valuation process (Tyebjee & Bruno, 1984).

The level of active involvement of the business angel is considered to be a proxy for diversification which is a means of reducing unsystematic risk (Erikson, Sorheim, & Reitan, 2003). In light of portfolio theory, it is argued that actively-involved angels use their own time and energy to reduce unsystematic risk. By way of example, family-oriented angels who make fewer investments (are less diversified) make up for that by being more actively involved in the ventures. Closer connections with the firm reduce informational asymmetries that lead to adverse impacts and moral hazard. Family angels' prefer pre-start-ups significantly more than other informal investors indicating a greater tolerance for higher levels of systematic risk as well.

The Role of Expected Rates of Return: Variations in expected rates of return are highly correlated with the stages of venture development which are highly correlated with the amount of time the investment will be held (Dixon 1991). The highest expected returns are early-stage and start-ups (46 percent) (Wright and Robbie 1996a) which decrease as investments progress through the stages of development until reaching MBOs and MBIs which have the lowest return expectations (Dixon, 1991). Early-stage venture capitalists are looking at time horizons of six to ten years and seeking returns of ten times plus whereas development venture capitalists investing in later stage financing prefer exit horizons of three to five years (Bannock, 1991). About one-third of investments are held for more than six years and high producing investments are generally held much longer than those that fail lending support to the adage that lemons ripen faster than plums (Sahlman, 1990).

Until recently, formal valuations of informal venture capital were unavailable. Therefore earlier studies assessed expectations based on angels' feelings about investment performance at the time of the study, or at the time of the investment. (The more current information about investment returns (Mason & Harrison, 2002) is included in Section 2.6 – *Performance*.)

Almost 40 percent felt their investments were performing below or well below expectations in the UK (Harrison & Mason, 1992) compared to 28 percent in the US (Gaston, 1989).

Twenty-seven percent felt their portfolios were performing well above or above expectations in the UK (Harrison & Mason, 1992) compared to 34 percent in the US (Gaston, 1989). In a subsequent U.K. study, serial angels were found to have higher initial expected rates of return than non-serials (medians of 30% and 20% respectively) though there was no significant difference in their expectations at the time of the study (Van Osnabrugge, 1998a). Like formal venture capitalists, the minimum rate of return expectations for British investors is inversely related to the amount of time the company has been in business. This ranges from a median return expectation of 50 percent for a pre-start-up to 25 percent for more established firms (Harrison & Mason, 1991). U.K. return expectations are higher than they are for U.S. angels as reported by Gaston (1989), Wetzel (1981) and Tymes and Krasner (1983). Sullivan and Miller (1990) found the expected return on the 'most recent investment' was 28.1 percent and the estimate of their 'overall return' on all investments was 21.9 percent. Canadian angels expect pre-tax, non-compounded average rates of return equivalent to 51 percent (Riding et al., 1993). Angels offset increased risk with corresponding increases in expected returns as angels holding technology-based portfolios expect higher returns compared to non-technology-based portfolio holders (Aram, 1989). The higher 'most recent investment' figure reflects the longer length of time the investment is expected to be held, as well as the obvious optimism which must accompany a new investment for the investment to have been worth making. The lower 'overall return' reflects all deals over a number of years which may include some which did not perform up to expectations.

Equity Splits & Share Preferences: Formal venture capitalists contribute far greater sums of capital, yet take smaller equity positions proportionally than informal venture capitalists.

Formal venture capital firms in Britain take between 10 and 30 percent of the venture's equity (Cary, 1995), clearly less than the 'vulture' majority share envisioned by entrepreneurs.

Angels take 35 percent of the equity in Britain (Coveney et al., 1996) and US angels' ownership ranges from 20 to 32 percent, tending towards the higher proportion when syndicates are involved (Van Osnabrugge & Robinson, 2000). Saetre (2003) argues that specific information held by industry-experienced angels, such as contacts with potential clients or knowledge of industry networks, is worth more to an entrepreneur than an angel who provides mere financial and general business advice. Thus, an angels' industry experience and value added should be relevant to the equity split.

Preferred shares are the favoured means of equity (Norton & Tenenbaum, 1992) by formal venture capitalists although there is a tendency towards more ordinary equity by smaller venture capital firms (Norton & Tenenbaum, 1993). As a risk control measure, preferred shares are paid first, thus paying the venture capitalist first when possible. Often, the preferred shares are convertible to common shares providing the formal venture capitalist with the option to take advantage of an IPO if the venture looks poised to be favourably received on the stock market. This serves to delay entrepreneurs' compensation until the ventures' outcomes are clear (Gompers, 1997). Convertible debentures are preferred by some Canadian business angels because they are a loan that has to be repaid. If the venture is successful, the debenture is converted to shares (Gordon, 1999). Some anecdotal evidence suggests that some multi-investing angels prefer convertible equity because it enables them to use versions of previously written (and hence paid for) contracts (Haines et al., 2003). Some angels may gravitate towards common shares, like smaller venture capital firms, because of the time, money and difficulty required to write convertible preferred share agreement contracts. More recently, early- seed-stage and angel investors are developing investment models that limit their downside during future rounds of finance. Liquidation and anti-

dilution clauses have become common in the US and the UK in an effort to protect current investors (Bushrod, 2003). These can be crippling to future rounds of finance because the same features that early-stage investors use to protect themselves make future financiers less interested.

In structuring deals, venture capitalists are alert for ‘quality’ signals which entrepreneurs’ display to introduce additional information that is unrelated to the business plan. Signals demonstrate the entrepreneurs’ value and commitment to the project (Barney, Busenitz, Fiet, & Moesel, 1989). Typically, signals are indications of the proportion of stock ownership that entrepreneurs are prepared to retain (in situations of unlimited wealth) (Leland & Pyle, 1977). Signalling theory may embody more importance for business angels (than formal venture capitalists) because angels are principals working on their own behalf (Prasad et al., 2000), and are not agents with professional salaried staffs (Feeney, Haines, & Riding, 1999) using others’ money. While formal venture capitalists look for signals regarding the amount of wealth that the entrepreneur is prepared to invest, informal venture capital should utilise the *proportion* of the entrepreneur’s initial wealth (Prasad et al., 2000). As early-stage entrepreneurs may face limited amounts of wealth, using the proportion of their wealth does not prevent them from accurately signalling. Thus, the absolute dollars available are not as important signals to the business angel, as are the value and the commitment indicated by the proportion of his/her wealth the entrepreneur is prepared to risk. Entrepreneurs who solicit angels with significant experience in the entrepreneur’s industry – by indicating their interest in the angel’s network of contacts and financial and investor competence (Saetre, 2003) -- may be signalling their own (the entrepreneur’s) worthiness.

Syndication: Co-investing is a social endorsement practice that reinforces the venture capitalists’ network and is a predictor of, and positively associated with, the expectation of risk (Bygrave, 1987), however, the motives for syndication are more risk sharing in nature than risk reducing (Lockett & Wright, 2001). As befits the risk-syndication theory, low-

innovation projects (with lower risks) have lower co-investment rates than high innovation projects (with higher risks) (Bygrave, 1987). Formal venture capitalists reduce informational uncertainties by appraising other venture capitalists' willingness to invest (Lerner, 1994).

They do this based on the superiority of decisions made when a number of independent observers agree (Sah & Stiglitz, 1986), and by taking advantage of improved information over new syndication partners during follow-on rounds (Admati & Pfleiderer, 1994). In fact, some venture capitalists reconsider investing in projects that they previously discarded because of the involvement of a particular venture capitalist (Steier & Greenwood, 1995). Formal venture capitalists also exploit informational asymmetries by investing in later rounds of profitable firms to boost their own reputations and returns (Lakonishok, Shleifer, Thaler, & Visney, 1991) so that they do not "conspicuously under-perform their peers" (Lerner, 1994, p. 18).

Angels indicate they like co-investing (Kelly & Hay, 1996a) and would consider re-investing under similar circumstances (Harr et al., 1988; Tymes & Krasner, 1983). Ranges of up to 7 are not uncommon with averages of two to three investors per deal (Coveney et al., 1996). Technology-based venture investors like co-investing so much they are prepared to accept less return for more co-investors while increasing their propensity to invest in ventures further away from home (Aram, 1989). In the UK, serial angels are known to prefer co-investing significantly more than non-serial angels (Van Osnabrugge, 1998a).

In a low-response rate survey conducted in the U.S.⁸, angels were observed to co-invest less as the level of risk increased, where risk was measured by the stage of venture investment (Aram, 1989). The observed effect may be related to the smaller sums of funds required by earlier-stage ventures (higher risk), thus requiring fewer angels (less co-investing).

Alternatively, the observed effect could be a consequence of entrepreneurs' improved abilities to identify angels as their ventures' mature. A further explanation may be that fewer angels

⁸ A mailing to 20,000 CEOs of firms under 500 employees resulted in 55 useable angel responses.

wish to participate in high risk investments. For business angels, a greater number of investors is associated with a decrease in the expected rate of return required by each individual investor (Aram, 1987, 1989). If co-investing reduces expected IRRs, the number of opportunities funded would be expected to increase as more opportunities are able to meet the target rate-of-return thresholds.

Staging: Staging financial disbursements controls the flow of capital to the investee until certain milestones have been reached. Staging protects venture capitalists' abilities to cease funding since entrepreneurs will continue investing as long as someone else is paying—no matter how dismal the prospects may appear (Sahlman, 1990). “The credible threat to abandon a venture, even when the firm might be economically viable, is the key to the relationship between the entrepreneur and the venture capitalist” (p. 507). Staging the funds dispersal is generally acceptable to entrepreneurs because of their optimism and confidence regarding the project and because they gain greater equity in the final firm than they would if they received all the funds in advance (Sahlman, 1990). However, staged financing has been likened to a kind of ‘perpetual under-investment’ which is a short term, non-co-operative strategy that can inhibit the vital venture capital-entrepreneur relationship (Cable & Shane, 1997). Formal venture capitalists may be tempted to under-invest in a venture since the costs of under-investing are greater to the entrepreneur (whose wealth is likely un-diversified by being largely tied up in the venture) than they are to the venture capital firm (whose wealth is diversified across a number of investments) (Cable & Shane, 1997; Sahlman, 1990). If the allocation decision and distribution process amongst the various venture capital firms is complicated, it hampers the young firms' opportunities while awaiting disbursement of much-needed capital (Steier & Greenwood, 1995). If business angels are less financially complex than formal venture capitalists, they would be expected to engage in fewer staging practices, or even fewer instances of follow-on finance. There are few references to angels' staging practices.

Contracting: The use of contracts attempts to reduce the moral hazard associated with entrepreneurs who may be inclined to excessive use of perquisites and generally misuse venture capital funds. However, writing contracts is expensive (Hart, 1995) and it is impossible to consider all possible malicious situations. Business angels rely on less complicated investment contracts (Van Osnabrugge, 1998c) partly out of lack of knowledge of contracts (Van Osnabrugge & Robinson, 2000). More recent evidence from Canada, however, suggests that angels' contracts now include previously negotiated exit provisions, put option provisions (forcing entrepreneurs to buy angels' shares), call option provisions, agreements of purchase and sale, and valuation methods if any of these are to be activated (Haines et al., 2003).

Summary

Even though formal venture capitalists have no formal risk assessment techniques or specific numerical expectations for rates of return, business angels are even less exacting (than formal venture capitalists) in their structuring, negotiations and contracting. Their lack of professional skills results in fewer: risk assessments, valuation methods, syndication opportunities, staging, and contracting clauses. Although the effect of their conduct results in ad hoc pricing, it also results in lower prices for entrepreneurs (Mason & Harrison, 1995b) and reduced transaction costs.

The inefficiencies in the angel market do not allow angels to benefit from the opportunities provided by syndication to the same degree as formal venture capitalists because they do not have as many networks and contacts with angels to facilitate syndication. The inability to easily identify and contact other angels prevents them from sharing and exploiting information that would serve to reduce and distribute risk.

The reversed information asymmetries that exist between formal venture capitalists and entrepreneurs (for this stage of investment) may be similar in direction, but greater in

magnitude for business angels and entrepreneurs because a smaller proportion of business angels are likely to have the expert structuring negotiating and contracting skills of their formal counterparts. Some business angels will have little to no experience in this area, particularly if they are investing for the first time or have little desire to spend sums on legal and accounting information. Improved informational advantages may emerge, however, as the educational effects of BANs and syndicates increases. The support provided by formal and informal angel organisations can contribute to more knowledgeable angels (Sohl, 1999) widening the gap between business angels who are actively involved in learning environments and those who act alone.

As a cohort, angels who invest in family will have differing informational qualities than other business angels and can be observed for the contrast they provide. Firstly, family angels are more visible to the potential investees (in this case, their family) (Shepherd & Zacharakis, 2001), thus increasing the entrepreneurs' ability to access them. Second, family angels have first-hand knowledge of the entrepreneurs and their proximity may increase information flows. If the potential for moral hazard is reduced, negotiating and contracting clauses may be less stringent.

2.5.5 Post Contractual Involvement

Post contractual involvement transcends the period between investment and exit. Limited partners in venture capital firms require general partners to convey accurate information about fund activities. One area for conflict are portfolio valuations that can be subject to biases in the absence of guidelines and rules (Fried & Hisrich, 1994). Mal-intentioned general partners could mislead fund investors regarding portfolio valuations prior to harvesting individual investments. Effective policies and procedures committed to during fund raising assist in preventing misinterpretations.

Governance issues primarily relate to the agent principal relationship as entrepreneurs face temptations to withhold bad information, overstate positive information, or overstate the performance of the firm. Monitoring, compensation and intervention (where necessary) attempt to limit moral hazard. An accurate and current picture of the firm and management's performance is important to the formal venture capitalist's future decisions to re-invest, or continue support. Monitoring activities exert discipline on the new venture team to perform in accordance with their previously established objectives. Understanding that the potential for executive replacement exists as a threat for not meeting milestones is an incentive to team performance.

Post-investment monitoring between venture capitalists and investees is designed to reduce informational asymmetries using informal and formal methods of governance. Increasing agency and business risks increases the sophistication of the monitoring methods applied (Barney et al., 1989). Contractual obligations, such as requirements for agents to provide performance information and board membership, encourage coerced cooperation by agents. Informal methods of governance such as spending time with agents and acting as a sounding board may bring general partners closer to agents' perspectives and routines.

Short term defection strategies by either party can mar the venture capital-entrepreneur relationship which is critical to co-operation (Cable & Shane, 1997). When venture capitalists see other more profitable projects to add to their portfolios these compete with the current investees for resources and capital. While the venture capitalists become more diversified, the entrepreneur has generally put all their resources into one venture and is highly un-diversified and vulnerable. However, there are opportunity costs for the entrepreneur as well who may see other opportunities which appear more profitable than the current venture that entice them to defect (Cable & Shane, 1997).

The costs of monitoring and oversight are both real and significant (Gompers & Lerner, 1999). Certain efforts may contribute to lessening these including proximity (or board membership) and behaving in a procedurally just manner. Where principals exercise control using methods that are deemed to be fair, relations between general partners and investees may be more harmonious (Sapienza & Korsgaard, 1996). The resulting reactions amongst the principals and agents engenders trust, thus reducing monitoring and associated costs. When principals are unhappy with agents' abilities to carry out business plans as intended, interventions take place. Understandably, interventions cause uncertainty amongst the remaining investees which may not resolve or improve operating performance concerns.

The level of involvement by professional venture capitalists is expected to add value to investees by way of a superior knowledge in financing companies to profitable liquidity events. The business and management advice provided by venture capitalists is theorised as an important feature of the formal venture capitalists' role (Dixon, 1991). Providing non-financial advice to investees promotes their rate of survival (Gupta & Sapienza, 1992) thereby justifying the return venture capitalists receive. However, as formal venture capitalists succeed and their portfolios grow, less time is available to be spent with each investee. This may be detrimental to the entrepreneur (Cable & Shane, 1997) since spending time with the investee is an indication of the venture capitalists commitment.

As principals, business angels' evaluations of entrepreneurial performance are based on their judgements of their agents and partners, and by their direct observation of the firm and its entrepreneurs. After the funds have been distributed, business angels' efforts are more scrupulous than was demonstrated in earlier stages (Van Osnabrugge, 2000). Where less contracting was discerned in the previous section, angels may not have accounted for the reporting, compensation and intervention necessary to effectively monitor their investments. Not all angels are motivated to take a seat on the board of directors (Riding et al., 1993). In situations where this is the case, an angel's only recourse in controlling an entrepreneur is to

remain personally involved in the firm and the entrepreneur's activities. The need to observe agents unambiguously may influence (possibly causally) angels' tendency to invest in local ventures. Alternatively, business angels' desire for honest and accurate information, as well as good relations may incline them towards investees where the entrepreneur is known to the angels or someone the angel knows, thus reducing the potential for moral hazard. The interventions by experienced and helpful business angels would be expected to add value to the investee. However, interventions by business angels are much further away from liquidity events because of the earlier stages where their investments generally take place. This heightens the likelihood that the venture will fail, hence reducing the worth of their value added.

On the other hand, having no need to develop or acquire reputation capital or to raise future funds from institutional investors, angels may not be motivated to engage in monitoring activities or direct observation of the entrepreneur. Given little responsibility to others, some business angels may not monitor at all.

Evidence

Lead venture capitalists visit their ventures approximately 19 times per year and spend 100 hours in person or on the phone (Gorman & Sahlman, 1989). With as many as an average of 10 investees per executive, formal venture capitalists monitor investees in a more hands-off manner (Van Osnabrugge, 1998b). In UK MBIs and MBOs, board representation and accounting information are the most common form of monitoring (Robbie, Wright, & Thompson, 1992), yet well developed relationships between entrepreneurs and venture capitalists and high cost monitoring are necessary to pinpoint problems in investees (Robbie & Wright, 1996). In the US, board membership is twice as likely when investees are near (within 5 miles) compared to when they are distant (500 miles or greater) (Gompers & Lerner, 1999). Angels call and visit their investees' premises more often than formal venture capitalists (Van Osnabrugge, 1998b) and 85 percent indicate taking a seat on the board

(Riding et al., 1993). Some business angels are passive in their administration of their investments, however (Freear, Sohl, & Wetzel, 1995a).

Venture capital firms employ the advice-giving role and its potential value as a means of differentiation when competitiveness for deals and visibility increases. Estimates vary by the role of the venture capitalist and the stage of the investee. Lead venture capitalists spend 13 hours a month and non-lead venture capitalists spend less than five hours a month (Elango, Fried, Hisrich, & Polonchek, 1995) which are similar to Gordon and Sahlman's (1989) 110 hours per year, and more time is spent with earlier-stage firms (Sapienza & Timmons, 1989).

From the entrepreneurs' perspectives, they welcome greater participation from both venture capitalists and angels in the area of alternate sources of debt and equity financing, but view formal venture capitalists as being more capable of helping technical or scientific entrepreneurs (Ehrlich et al., 1994). Though operating experience is considered desirable (Murray, 1994), venture capitalists primarily bring financial expertise to the board (Rosenstein, Bruno, Bygrave, & Taylor, 1993).

The range of roles played by business angels by way of oversight is far greater than for formal venture capitalists. Business angels who choose to become involved are most likely to do so as a member of the board of directors in a consulting capacity, but sometimes they engage in full or part-time employment activities as well (Coveney et al., 1996; Freear, Sohl & Wetzel, 1990; Wetzel, 1981). Their performance targets tend to be lower than formal venture capitalists, and they are less forthcoming with assistance for crises, or to act as sounding boards, or to help entrepreneurs develop professional support groups (Ehrlich et al., 1994).

Value Added: Information provided by venture capital firms is intended to help the new venture team learn, however, it may be unwise to overstate the breadth of the role of the venture capitalist. As informants about key suppliers, customers and contacts

(Sapienza 1992), and as administrators experienced in various management alternatives (Bygrave & Timmons, 1992), these roles are not as important to the firm as their role as financiers and facilitators of finance. Evidence indicates that – though a positive relationship exists -- there is no significant improvement in the investees' long term performance (as measured by those moving on to exit) from receiving and acting upon strategic and operational advice from venture capitalists (Busentiz, Moesel, & Fiet, 1997).

The provision and receptivity to advise is a two-way street. In addition to the provision of valuable information, information and advice must be received positively to have a learning effect. Entrepreneurs who are receptive to receiving management advice are teams who have long-term experience working together, or technology entrepreneurs receiving operational advice as the task complexity increases (Barney, Fiet, & Moesel, 1996). The longer a team is in the industry or venture, or the more technologically oriented the venture entrepreneurs, the less disposed they are to positively receive management or operational advice from venture capitalists.

Perversely, tentative evidence from a non-representative sample of angels suggests that advice offered casually seems to result in improved exits over angels who offer advice in a serious manner (Lumme, Mason, & Harrison, 1996). Entrepreneurs who have early-stage opportunities and good managerial experience may prefer to actively seek angels instead of venture capital firms because the venture capital firms' management capability and expertise may not be necessary (Ehrlich et al., 1994) although angels generally expect a greater share of the equity for less funding. Entrepreneurs who have difficulty meeting venture capital performance targets or who do not need or want outside help when experiencing problems may prefer angel financing.

Angels view their relationships with entrepreneurs as positive (Stevenson & Coveney, 1994) and early-stage entrepreneurs indicate they are receptive to advice offered by angels and find

it moderately to very productive (Freear, Sohl, & Wetzel, 1990). Receptivity to advice and positive relationships may occur if early-stage companies have a greater proportion of inexperienced entrepreneurs. However, given the failure rate of early-stage firms, it seems reasonable that there are some instances of negative associations and perceptions by both sides.

Intervention: Replacing the entrepreneur is one method employed by venture capitalists to rejuvenate errant investees. Rosenstein et al. (1993) report that 74 percent of low performing companies and 40 percent of high performing companies had had their CEO 'replaced' at least once. This control mechanism explains why formal venture capitalists are preoccupied with market risk – because they feel they can control agency risk by replacing the entrepreneur if necessary (Fiet, 1995b). However, intruding on investees' managements is best employed only in extreme circumstances and not precipitously (Fried & Hisrich, 1995; Sweeting, 1991). Dismissing any of the entrepreneurs (in an attempt to improve firm performance and future exit outcomes) is surprisingly ineffective (Busenitz et al., 1997). Firing or dismissing a key initial player in a venture capital investment produces a significant, negative and noticeable impact on the long term performance of the venture. Although it has been noted that with some ability and intervention, about half of 'living dead' investments can be successfully resuscitated (Ruhnka, Feldman, & Dean, 1992), and are then referred to as 'good rumps' (Wright, Robbie, Romanet, Thompson, Joachimmson, Bruining & Herst, 1993). Angels have less capacity to replace entrepreneurs with whom there are principal-agent concerns which explains their pre-occupation with agency risk (as opposed to market risk) (Fiet, 1995b). This is, for the most part, because contracts and business structures are not complex enough to make allowances for goal divergence (Van Osnabrugge & Robinson, 2000). Unenforceable share holdings or a lack of contractual provisions may prevent them from having any recourse. The performance results of business angels' efforts to oust negligent or irresponsible entrepreneurs has yet to be studied in detail.

Ventures perform better in the long run when venture capitalists act with a sense of fairness, and the entrepreneur and new venture team feel that they are trusted and supported giving credit to procedural justice in an organisational performance context (Busenitz et al., 1997). This finding is contrary to agency theory predictions and suggests that the social capital approach to understanding organisational assets deserves exploration (Nahapiet & Goshal, 1998). The social capital approach regarding active angels' post-involvement activities was considered in the value of business angels' contacts and networks to the investee (Saetre, 2003). Saetre's assertion is that finance provided by passive angels represents an economic approach, that 'competent' capital (active angels provide capital, commitment, and competence) embodies the human capital approach, and that angels' exercising 'relevant' capital post-contractual activities (defined by Saetre as adding angels' relationships such as contacts and networks to competent capital) denote a social capital approach.

Summary

The range of post-contractual involvement is broad for business angels. Some informal venture capitalists' post-investment activities compensate for a lack of pre-investment scrutiny. Their preference to reduce transaction costs and control procedures by way of fewer contractual obligations, results in situations where many angels become actively involved in order to limit information asymmetries. The fact that they prefer post-investment contact to pre-investment due diligence and contracting connotes that they have more time to devote to the investee than do formal venture capitalists.

At the same time, some business angels do not involve themselves in their investments at all and it is not clear whether these individuals are more capable in their due diligence or investment selection techniques. This situation is unlike that of formal venture capitalists who must manage all investments, or syndicate with a firm that will provide appropriate and adequate oversight, in order to be fully responsible to their fund providers. In fact, spending

too much time on one investment, or favouring an investment, is actively discouraged (Van Osnabrugge & Robinson, 2000).

Recent observations regarding financial, competent and relevant capital have the potential to move the post-contractual debate beyond the discussion of ‘lead and passive’ and ‘active and passive’ interventions. The more refined observations also lend support to other theoretical perspectives.

2.5.6 Exit and Realisation

The exit and realisation of venture capital investments is the ultimate goal of capital providers. As value-added investors, venture capitalists may contribute significant financial and market advice to the entrepreneur regarding the most opportune timing for exit based on investees’ prospects. Venture capitalists will be motivated to encourage exits when the projected marginal costs of monitoring the investment exceeds the projected marginal value-added they perceive they can contribute by continuing to hold the investment (Cumming & MacIntosh, 2003a), although their motives to exit may not equally benefit the entrepreneur. Venture capitalists may want to pursue more valuable opportunities, or they may have fund closing deadlines looming (Cable & Shane, 1997).

New parties are introduced when venture capitalists and/or entrepreneurs attempt to sell their equity. At this stage, most asymmetries gravitate to the informational inequalities that exist between inside owners and outside buyers. In addition, informational asymmetries are exaggerated because selling shares in private firms is conducted amongst a market that is largely illiquid. Much of the work regarding exits and information asymmetries has been conducted by Gompers and Lerner (1999) and Cummings and MacIntosh (2001; 2003a; 2003b).

The five major types of formal venture capital exit are IPOs, strategic acquisitions (where all the shares are sold to an acquiring company generally for strategic purposes), secondary acquisitions (where only the venture capitalists' shares are sold), buy-backs by entrepreneurs, and write-offs (by venture capitalists) (MacIntosh, 1997). A range of informational asymmetries are associated with various exits as some buyers are at a greater disadvantage than others. Cumming and MacIntosh (2003b) assert that IPO issuance purchasers -- who are largely institutional investors -- are relatively unsophisticated about technology investments compared to, for example, a strategic acquirer who would have intimate knowledge about the industry and the investee's prospects, or an entrepreneur in the case of a buy-back. The specialised financial and investment knowledge of investment bankers and their analysts cannot replicate that of the strategic acquirer or the entrepreneur. Thus, the information asymmetries are greatest amongst technology IPOs. Secondary exits may give potential strategic acquirers a window on the business's inside operations to determine the strategic value of purchasing the remaining stock. However, they may signal disagreement between the entrepreneur and the venture capitalist. Cumming and MacIntosh (2003b) hypothesise that buy-backs have the least information asymmetries because the entrepreneur is fully aware of the firm's operations and future sales potential. Buy-backs are most likely to be characterised as living dead because the buy-back puts "a large strain on the firm's and/or entrepreneur's cash resources and, thus almost by definition, will not involve companies with high valuations" (p 524). Like, buy-backs, write-offs have few informational requirements because there are no outside buyers involved in the process. Venture capitalists write-off (or sometimes write-down) the investment from their books indicating no attempt to recover the investment by sale to another party.

The degree of information asymmetry is theorised to have implications for prices paid for shares (and ultimately the exit vehicles sought by the venture capitalists) because greater asymmetries are associated with greater risks which result in discounting (Cumming & MacIntosh, 2003a). "Those buyers who are less able to resolve information asymmetries and

value the firm will pay less for the VC's interest in the entrepreneurial firm than buyers who are better positioned to do so. The VC, as seller, thus generally selects that form of exit that results in a sale to the buyer(s) best able to resolve information asymmetries" (p 104).

Mason and Harrison's (2002) examination of exits by business angels identifies six categories of angel exits which differ slightly, by definition, from those highlighted by MacIntosh (1997). Mason and Harrison refer to the sale of the firm to a third party as a trade sale rather than MacIntosh's strategic acquisition. Sale of the business angels' shares to an outside party is similar to MacIntosh's (1997) secondary sale, and the sale of the shares to an insider is similar to the venture capitalists' buy-back. Asset break-ups may be similar to the formal venture capitalists' write-down, and write-offs appear in both analyses.

Increased illiquidity and reduced contractual obligations typical of business angel investments amplify information issues. Entrepreneurial firms' have been historically reluctant to disclose returns, increasing the likelihood of pricing anomalies. Cumming and MacIntosh (2003a) use the ratio of market value to book value as their indicator of quality entrepreneurial firms.

Although the market for IPOs is a principle determinant of the venture capital industry's vitality (Black & Gilson, 1998), the relative rarity with which angels exit to IPO evokes anomalies regarding the qualities necessary to encourage a vibrant angel industry. Given the smaller sums, reduced due diligence and more meagre monitoring invested, IPOs are not necessary for angels to acquire exceptional returns. Effective trade sales can produce handsome rates-of-return. On the other hand, to the extent that business angels invest in earlier stages greater proportions of exits are expected to be due to write-offs because the variance of the early-stage risks will have had time to mature and materialise. In angel situations, similar to that noted previously, entrepreneurs who are in a position to buy-back their shares have better information about the firm (than would an outside buyer such as an angel) and would be expected to price their offers accordingly. The quality of the information

forthcoming from the owners during a strategic acquisition would be expected to be commensurate with their perceived value of the firm since improved information channels are associated with less discounting when pricing illiquid shares.

Business angels' rate and quality of participation in an investee's industry may be a factor influencing their facility in identifying suitable acquirers. Angels who add value to their investees and who have invested in industries for which they have experience may be expected to identify valuable exit opportunities by way of increased information about acquirers, contacts and networks. Alternatively, angels that do not add value to their investees, or who invest in technologies or industries in which they have no background, may not have the informational resources to identify and execute profitable liquidation partners and events. Likewise, lack of professional financial skills may inhibit the entrepreneurs' probability of exiting to IPO which is known to require detailed and knowledgeable handling of the entrepreneur as well as experience with numerous outsiders such as legal counsel, accountants and investment bankers. Business angels who are not active, nor who have experience in an investee's industry, nor who exercise non-entrepreneurial financial acumen may not isolate suitable buyers to optimise their purchase price potential.

Evidence

For formal venture capitalists, liquidity events are considered in advance of the investment and are an important factor in deciding in whether to invest in a firm (MacMillan, Siegel, & Subba Narasimha, 1985b). Illiquidity of venture capital investments is a significant factor in venture capital exits and pricing and generally depresses the industry (Muzyka, Birley, Leleux, Rossell, & Fendixen, 1993). In Europe, in 2002, €27.2 billion were invested by the private equity capital industry compared to €8.1 billion worth of investments divested. The three-year rate of return for the industry is 4.1 percent, down following the 1995-2000 highs (*Preliminary Annual Survey*, 2003). American private equity three-year returns reported for

2002 are –5.4 percent, reportedly due to falling valuations and scarce exit opportunities (Metzger & Reyes, 2003).⁹

The availability of IPOs as a realistic option for exit depends on market and economic conditions which can vary greatly. In Europe, the IPOs status during the first half of the 1990's was not greatly viable (Relander, 1994) as both the numbers of companies going public and the total financing raised declined (Leleux & Muzyka, 1997). During that period, markets in the USA were performing better (Murray, 1994). Some European firms bypassed their own national markets in favour of listing with the NASDAQ in the US and the French Second Marché, established in 1983 had 11 new listing in 1991 down from 53 in 1987 (Leleux & Muzyka, 1997). In Europe, the latter half of the 90s were characterised by unprecedented exit and IPO activity only to be faced with sharply declining activity in 2001 and 2002. In 2002, only 1.1 percent of divestitures were conducted by IPOs (*Preliminary Annual Survey*, 2003).

Seasoned venture capitalists are good at taking companies public (Lerner, 1994), but issues of under-valuation, under-performance and high transaction costs plague IPOs. Under-pricing at the time of issue, common in North American markets, can significantly inflate immediate aftermarket trading prices though this may not be in the best interest of firms' finance raising potential. Attractive prices on new issues permit investors to make abnormal returns in the immediate after market (Prasad, Vozikis, Bruton, & Berikas, 1995). This phenomenon aids investor exits and harvesting and is more apparent in exchanges where stock is presumed to be more risky such as the American NASDAQ (Bruton & Prasad, 1997).

Generally, buy-outs and buy-ins have active exit markets because of the high return and relatively lower risk associated with these investments (Wright, 1992). In 2002, the UK

⁹ The Canadian Venture Capital Association does not provide statistics about divestitures, nor returns in the information publicly available on its web site.

buyout market fell to £15.4 down from a record surge from 1993 to 2000 in both value and numbers, and exit difficulties are presenting problems for the industry with flotations down and failures increasing (Wright & Burrows, 2003). Formal and informal venture capitalists specialising in seed and start-up stages confront even greater issues of illiquidity when attempting to identify follow-on financing and exit opportunities and have been referred to as the “second equity gap” (Murray, 1994).

IPO

Unlike other methods of exit, IPOs provide investors and entrepreneurs with a method of realising investment value as well as raising finance for the firm at the same time. The initial issue of new equity on the public market allows funds to flow into the company, often with little or no change in management, and also creates harvestable value for the owners’ because they now have an established marketplace in which to trade their remaining equity position. IPOs are frequently reported to be the preferred choice of harvest (Prasad et al., 1995; Relander, 1994) although there is little evidence to confirm this (Norton, 1995).

Entrepreneurs favour stock market flotation because it offers prestige and opportunities for the company, permits better terms to be negotiated with banks and lenders, and -- when markets are good -- represents the most widely known method for achieving the full value of their investments (Bleackley, Hay, Robbie, & Wright, 1996). Contrary to common misperceptions, CEOs and entrepreneurs find that “... they had not lost any of their personal autonomy after the firm went public” (Desroches & Belletante, 1993 p.478). Entrepreneurs suggest that investor interest slips after the IPO and investment banks neglect the small company shares, yet expensive listing fees need to be maintained (Muzyka et al., 1993).

Early-stage venture capitalists like to exit via IPOs yet understand that they are only possible in good economic conditions and when small company stock is in demand (Murray, 1994). For business angels, IPOs are the least common method of exit (7.6 percent), however, IPOs

represented the greatest proportion of high performing angel exits (Mason & Harrison, 2002). Although the absolute number of trade sales is more than three times larger than IPOs, 55 percent of trade sales produced an IRR in excess of 50 percent whereas 78 percent of IPOs produced an IRR in excess of 50 percent (Mason & Harrison, 2002; Murray, 1994). There were no IPOs reported by the angels in the Finnish study (Lumme et al., 1996). There is little evidence of angels assisting investee firms to IPO (Lerner, 1994).

Strategic Acquisition

Trade sales are an important means of exit for formal venture capitalists. In 2002, trade sales represented the single largest proportion of exits transacted (29.8 percent) as reported by the European Venture Capital Association (*Preliminary Annual Survey*, 2003). Two types of formal venture capitalist emerge when considering exits, path sketchers and opportunists. Path sketchers examine and consider the exit as a part of due diligence. They consider potential buyers in advance and allow exit possibilities to influence the deal. Because of the advance planning nature of their behaviour, they are better at working out exit details and have a more co-operative and trusting relationships with entrepreneurs. Thus, path sketchers prefer trade sales (Relander, 1994).

The trade sale is useful as a means of coveting proprietary information which the venture firm does not want to reveal to its competitors which would occur in the case of an IPO. If the venture has a clear product advantage in their market, the investors seek an exit partner which will manage the agency and monitoring activities without revealing the technical or process advantage publicly (Norton, 1995). In cases where the venture is seen as a challenger, the purchasers' motivations may be based on a strategic defensive rationale whereby the younger firms' products will be useful to fill gaps in the buyers' product lines or markets.

From the entrepreneurs' perspectives, easier transactions, strategic assistance by the acquiring firm, and fewer costs make trades sales attractive exit mechanisms, but entrepreneurs who

want to stay with the company are often anxious about the possibility that management will be replaced (Bleackley et al., 1996). In a pan-European study, the CEOs of venture backed firms consider trade sale to be easier and cheaper than IPOs and preferable even though they recognise there is a possibility of being replaced (Muzyka, 1993). Some of the wealth created for post-harvest entrepreneurs, who leave the firm at or near the sale, is recycled in the community (Mason & Harrison, 2006). Entrepreneurs' considerable experience and resources, help create new ventures and some of the entrepreneurs go on to become business angels.

In the U.K., early-stage formal venture capital investors prefer trade sales because they face an imbalance of power and detrimental valuation effects when attempting to acquire follow-on financing from developmental venture capitalists (Murray, 1994). To avoid issues regarding power imbalances and equity dilution, early-stage venture capitalists prefer full realisation by trade sale to corporate or other third-party buyers. Business angels would be expected to suffer the same treatment by development venture capitalists, if not worse, and empirical evidence is supportive of trade sales as the dominant method for angels to exit profitably (Mason & Harrison, 2002). Angels in non-representative samples in the UK exit to trade sales in 26.1 percent of the cases (Mason & Harrison, 2002) and 16.6 percent of the exits in Finland (Lumme et al., 1996). Furthermore, they produce better returns because 90.3 percent of the UK trade sales and 75 percent of the Finnish trade sales were executed with modest to significant returns (Lumme et al., 1996; Mason & Harrison, 2002). This is consistent with the conventional venture capital adage that says indicates good investments find good exits, and the living dead are returned to their owners where possible.

Secondary Acquisition

As defined by MacIntosh (1997), secondary acquisitions are the sale of the venture capitalists' shares while the entrepreneur retains ownership of their portion of the company. Often these are strategic acquisitions, and rarely they are purchases by other venture

capitalists (Cumming & MacIntosh, 2003a). Fifty percent of the exits in the Argentinian business angel study sold to other individuals (Pereiro, 2001). In some cases, selling shares to a third party is associated with deals that are still operating but have not lived up to their potential, and are thus referred to as “living dead” (Ruhnka et al., 1992). Third-party sales can be a source of profitable exits for angels as half of the 12 third-party exits in the UK study achieved IRRs greater than 19 percent (Mason & Harrison, 2002) and 20 percent of Finnish angels exited to third-party sale -- half of them profitably (Lumme et al., 1996).

An early-stage venture capitalist or angel may perceive a syndication with a larger fund to be preferable to an exit. This kind of syndication is practised when the original investor stays on as the lead (in terms of direction, not size) while bringing in other investors (Murray, 1994). In these cases, the venture capitalists prefer to co-invest alongside the angels, rather than to permit them an exit route, so the angels can continue to play a role in advising the investee (Harrison & Mason, 2000; Murray, 1994). Whereas co-investment and types of syndication are common for larger formal venture capital firms, there are problems associated with developing future sources of follow-on finance for early-stage venture capitalists and informal venture capital investors. Earlier investors suffer significant share dilution which is magnified as successive follow-on rounds are conducted. Early-stage venture capitalists least prefer these syndications because early-stage capitalists have few other options and the larger funds negotiate with that knowledge. Murray's (1994) work showed that almost half of the early stage venture capitalists thought the balance of power lay with the new investor even though the first financier provides the support and specialisation required by the investee.

Such imbalances would be further amplified in the case of angels attempting to syndicate with formal venture capitalists. The angel's investment, being much smaller than that of a venture capital firm, would be further diluted during future rounds. Furthermore, business angels

would have even fewer negotiating experiences. Empirical evidence confirms these perceptions as formal venture capital represents little exit potential for angels (Murray, 1994).

Buy-back

A buy-back by the entrepreneur or management team is frequently a fall-back response for formal venture capitalists when the company has not lived up to its potential and is not well positioned for an IPO or acquisition. Buy-backs clear investments from the venture capitalists' books without creating a loss (Murray, 1994) and are often triggered by contractual rights determined at the time of the investment (Cumming & MacIntosh, 2003a).

Divesting shares to the entrepreneurs is a viable exit route for business angels if the entrepreneurs can secure the resources. Mason and Harrison (2002a) report 16 percent of angel exits are sold to existing shareholders and more than one-third are do so at IRRs of 20 percent or greater. Finnish angels report 24.5 percent of sales to other shareholders representing 25 percent of the significantly profitable exits

The rate of successful buy-back may depend on business angels' ability to execute contracts that stipulate share buy-backs or convertible debentures. Repayment puts considerable pressure on an entrepreneur's resources; hence, if there are no contractual commitments, entrepreneurs may not honour a moral (non-contractual) obligation to release the business angel.

Write-off

Write-offs due to bankruptcy or firm closure are the single largest exit route for business angels. The European Venture Capital Association reports that 28.5 percent of divestitures were written off in 2002. The US National Venture Capital Association does not present the data but refers to "scarce distributions to investors" and "lifeless IPO and M&A markets" (Metzger & Reyes, 2003, p. 1). There are few studies that focus on venture capital failures

because public discussion of failures looks unattractive on venture capitalists' records.

Underestimating the length of time it takes to achieve the level of sales projected is the most common reason for write-offs, followed by an inability to control costs (Dixon, 1991).

Business angels may be more negatively affected by write-offs than formal venture capitalists, both from an emotional and financial standpoint. Angels may not be aware of the venture capitalists' 2-6-2 adage and may be more adversely impacted financially because they have fewer investments across which to mitigate losses. In addition, angels' losses may impair their future decisions or motivations to invest because they are not aware that losses are common amongst private equity investments. In the UK, 40 percent of angels wrote off investments (Mason and Harrison, 2000a), as well as 30 percent in Argentina (Pereiro, 2001) and almost 39 percent in Finland (Lumme et al., 1996).

Summary

Unlike formal venture capitalists who rely on small numbers of very successful investments, business angels do not commonly have a large enough portfolio to withstand a large number of poorer investments (Mason and Harrison, 2000a). Principals who make only a handful of high risk investments may suffer from more losing than profitable exits. Where business angels are not aware of this very likely possibility, they may not set hurdle rates of return as high enough to account for expected losses. Furthermore, in calculating their return on investment, angels need to consider deals which may have taken place over decades.

There have been no in-depth investigations conducted regarding business angels who have been part of IPO exits. The transition of a high growth firm to a publicly traded corporation requires considerable knowledge and experience, not to mention money. Knowledge of market makers, strategies, and peak performance periods for issuing new releases is instrumental in taking a firm public and requires seasoned knowledge. Only the most capable and experienced informal investors would be capable of this activity.

2.6 Performance

Venture capital performance is dependent upon holding periods and the exit opportunities available at the desired time. There is also variability in its reporting and transparency from country to country. This section reviews the literature on venture capital returns which is followed by an examination of angel returns which are particularly susceptible to holding periods given their patient capital title. The performance of angel investments go after.

2.6.1 Venture Capital Returns

The performance of venture capital investments is affected by the ability of venture capitalists to exercise their specialised skills in selecting, adding value and exiting investments. Forces at work in the industry, such as the exit opportunities available at the time of divestiture, will further determine the investment's success. Other variables that influence performance are the stage at which the investment was made which affects risk-return relationships, the proportion of successful to unsuccessful investments in the fund, and the length of the holding period.

The first evaluation of US returns concluded between 1969 and 1985 showed a median return of 27 percent peaking in 1982 (Bygrave, Fast, Khoylian, Vincent, & Yue, 1989). Returns on funds started after 1983 declined until the run-up between 1995-2000 took hold. In the UK, an average of 12 percent was earned on funds organised between 1980 and 1990 and Holland showed a return of 13 percent for a period between 1986 and 1990 (Wright & Robbie, 1996). The European Venture Capital Association's annualised pooled IRR from 1980 to 2002 showed early-stage venture capital performing at 5.1 percent, development venture capital at 10.6 percent and buy-outs performing at 14.2 percent. The more recent downturn in the equity markets since 2000 is reflected in three-year early-stage IRRs of 0.3 percent, 2.0 percent and 5.2 percent respectively (*Preliminary Annual Survey*, 2003).

Returns on individual investments vary significantly within the venture capitalists' portfolio (Huntsman & Hoban, 1980). Work by Wright and Robbie (1996a), Bygrave et al. (1989c) and Huntsman and Hoban (1980) demonstrate that the average return would be negative if the top decile or quartile are removed. In a US study, the top 15.7 percent of 383 investees ultimately represented 75 percent of the total ending value (Sahlman, 1990). Low returns on specific investments means that potential investees' expected returns must be large enough to cover the losses of the losers within a fund. The hurdle rates of return increase to account for the losses so capital gravitates to proposals which demonstrate significant expected returns, thereby reducing the total number of proposals funded (Robbie, Wright, & Chiplin, 1997).

Holding periods are important to rates of return because IRR calculations are time sensitive. The European Venture Capital Association suggests "the normal life cycle of private equity funds requires at least six years to deliver significant returns" (*Preliminary Annual Survey*, 2003, p. 2). Early-stage venture capitalists prefer to exit after seven to ten years (Murray, 1994) which is double the development venture capitalists' preference for exit of three to five years (Bannock, 1991).

Unquoted companies' returns embody an unusual risk/return relationship. Large expected returns (anticipated for more risky early-stage investments) and lower expected returns (anticipated for less risky later-stage investments) do not prevail. In a twist of financial theory, some of the lowest risk ventures, MBOs and MBIs, produce some of the highest returns (Bygrave et al., 1989). Collectively, the venture capital industry's early-stage investments produce little return and the smaller number of low risk performers represent significant returns. In the UK, MBOs and MBIs had an average return of 23.8 percent (BVCA, 1996) whereas early-stage funds launched between 1980 and 1991 posted an average return of only 4.3 percent by 1995 (*BVCA Performance Measurement Survey*, 1996). This kink in the risk/return curve is atypical of risk/return relationships for a portfolio of quoted companies.

2.6.2 Angel Returns

Business angels have a broader range of skill sets than formal venture capitalists, discussed both at a theoretical and evidentiary level in the previous section, because business angels have a variety of backgrounds. Considerable performance issues arise given an investor's (in)ability to administer investments and gain access to adequate markets after an often longer-than-expected holding period. Angel investments are sometimes referred to as 'patient' capital because the time horizons for exit range up to ten years (Riding et al., 1993). Though the patient capital description is widespread, large numbers of angels sampled during the '80s and '90s indicated expectations of exiting in three to five years (50 percent in Mason and Harrison, 1991; 41 percent in Landström, 1993; 50 percent in Tymes and Krasner, 1983; 75 percent in Harr et al. 1988; and 52 percent in Lumme et al., 1996). The median expected project life in Argentina is only two years (Pereiro, 2001). Angels obviously sustain incongruity between expected and actual holding periods.

On the other hand, recent studies of actual exits report large proportions of angels who exited sooner than suggested by the term 'patient capital.' In the UK, median holding periods for exceptional investments are four years with poor investments exiting in two years (Mason & Harrison, 2002)¹⁰. Profitable Finnish exits were held for five years and loss-producing exits held for not quite three years. Again, there is a discrepancy between actual holding periods and the terminology. The quality of patience used to refer to angel capital is likely derived from the balance of investments that have not yet exited. Whereas formal venture capital firms must exit at a given pre-determined time, angels who cannot find an exit vehicle may end up holding investments indefinitely. When the non-liquid investments form part of the assessments, the average and median holding periods may be considerably longer, regardless of their preferences or expectations.

¹⁰ Medians are reported in this sample because some of the investments are old and have long holding periods which distort the mean when reported.

The returns emerging from angel exits are not exceptional considering the wildly successful angel anecdotes that have circulated in the public press, though on average, they are comparable to formal venture capital (Mason & Harrison, 2002). One study notably has provided insight about exits in the UK (Mason & Harrison, 2002), and to a lesser extent, in Argentina and Finland (Pereiro, 2001). In the UK study, half of the responding angels had achieved at least one exit (Mason & Harrison, 2002). In Finland and Argentina respectively, 31.6 percent of the 155 investments (Lumme et al., 1996) and 22 percent of angel investments had exited (Pereiro, 2001). In the UK study, the largest and most comprehensive examination, 51 angels who had achieved 128 exits formed the basis of the study group (Mason & Harrison, 2002). Thirty-six (36.2) percent returned IRRs in excess of 25 percent and 39.8 percent lost their investment in full or in part. On balance, the returns were less favourable for the Finnish study which considered 49 exits for 39 angels. They found that 20 percent of business angels exited at IRRs greater than 20 percent, and 56 percent lost some or all of their investment. The remaining 24 percent made modest returns or broke even (Lumme et al., 1996). Despite the high rate of failures in some studies, some co-investors in Harr et al.'s (1988) study report that informal investments were their most profitable form of investment and they would invest again.

In comparison with early-stage formal venture capital funds, business angels show better performance in many categories (Murray, 1999). UK early-stage venture capital funds report at least 50 percent more full and partial losses than business angels, and have only 1.8 percent more exits in the "100+" IRR category. In every other IRR category, business angels outperform early-stage venture capital funds (Mason & Harrison, 2002). A number of factors distort the comparison, however. The formal venture capitalists in this comparison are limited to early-stage investments, but angels invest in any stage. Furthermore, angels' valuations are derived from a variety of different methods, and are probably unreliable. One

way to compensate for this is to individually compare the exits within the venture capital portfolios (instead of the funds' overall IRRs) to a collection of angel exits.

It is noteworthy that there are a number of complications between reporting returns for formal venture capital funds and reporting returns for angel investments. Firstly, venture capital funds report returns on their portfolio of investments including exits and valuations of non-exited investees (Metzger & Reyes, 2003), whereas angels generally only report on exits.

This anomaly obscures the data by the weight of the large numbers of angels that have not yet exited. Secondly, the point at which angel investments can be classified as 'living dead' also impacts on returns. The presence of older "non-exitable" investments that are not accounted for because they have not been exited, and are not subject to valuation, underestimate losses.

Formal venture capital firms would be compelled to divest themselves of these investments as the fund nears its completion, whereas business angels can hold them indefinitely as 'yet to be realised,' thus biasing the findings. The third issue is one of transparency. Transparency concerns arise when return calculations are left to the investor. IRRs, multiples, DCFs and various other methods can be confusing (Mason & Harrison, 2002) to non-professionals, thus compromising the comparability of data¹¹.

Amongst non-exited investments, 27 percent of angels in an earlier UK sample reported doing above or well above expectations with 38 percent below or well below expectations (Harrison & Mason, 1991). Only 25 percent of Swedish angels felt their investments were performing moderately or above expectations (Landstrom, 1993). Calculated as a multiple, 70 percent of Harr et al.'s (1988) sample expected to realise one to 10 times their investment, while 21 percent lost part or all of their capital. Riding et al.'s (1993) Canadian angels expected an average after tax return of 32 percent.

¹¹ We return to this issue in some detail in Chapter 7.

2.7 Conclusion

This chapter is a review of the basic qualities of business angel investors, the market and industry effects that impact the supply and demand of their finance, a stage-by-stage examination of the investment process and a review of their performance. The literature of formal venture capital exceeds considerably that which is available about informal venture capital. Where complementary research exists, business angels often behave in a manner more divergent from that of their formal counterparts. Assumptions of traditional economic theory dominate formal venture capital, however, a broader range of theoretical perspectives may be needed to explain the behaviour of informal venture capitalists.

A large number of similarities and differences between informal and formal venture capital were identified with respect to industry and market perspectives, firm level perspectives and the treatment of performance. They are summarised briefly here. Agency roles and the relationship to information asymmetry is the source of many of the differences between formal and informal venture capitalists. Informal venture capitalists do not have a dual agency role which permits them more latitude in their conduct. Formal venture capitalists, on the other hand, have to report to their limited partners, and their industry and firm-level practices require them to be mindful of these principals.

Informal venture capitalists provide private equity in sums that are often directed at the equity gap, a result of formal venture capitalists' gravitation to larger investment funds and more mature investees. Despite business angels' contributions, the equity gap appears to be widening as formal venture capitalists' funds outpace the needs of seed, start-up and early-stage entrepreneurs. Thus, the supply provided by each industry is considered complementary.

The industry structures for informal and formal venture capital are very different. The informal venture capital industry is heterogeneous, fragmented and has few barriers to entry

whereas formal venture capitalists are extremely homogeneous, concentrated, oligopolistic with many barriers to entry. Although both suffer from market inefficiencies, informal venture capitalists have even fewer opportunities to exchange and receive information.

Policy interventions to increase supply take place in the form of tax manipulations which are similar for the two industries. Informal venture capitalists have also benefited from policy interventions to increase market efficiencies (information exchange and access to entrepreneurs) by implementing programs to support the development of BANs and BISs.

Demand-side issues vary somewhat between the two groups. Informal venture capitalists have additional funds to invest yet often report not finding suitable entrepreneurial opportunities. Formal venture capital seems to vary by region. Some regions have so much capital available they are forced to compete for quality entrepreneurial prospects whereas other areas have little access and exposure to formal venture capital.

Firm level perspectives highlighted the stages of the venture capital investment process and investigated the similarities and differences between the participants at the formal and informal level. Informal venture capitalists exercise a wide variety of practices with regards to deal generation varying from no proposal review to extensive proposal review processes. Often find their deals from referrals and informants with whom they are acquainted. BISs are established to assist angels identify opportunities in the presence of market inefficiencies. Because business angels do not have stringent deal objectives to which they must adhere (syndication aside) so they are free to engage in any deal flow practices they desire. Formal venture capitalists, on the other hand, consider deal generation as a vital element of competitive advantage. They review many proposals and actively seek potential investees. They too refer deals to other venture capitalists and angels, and are receptive to referrals.

Differences in the process of screening and selection indicate that business angels are not screening investments for what they can do for the investor, but rather for what the investor can do for the investment. Their investment criteria are varied and they are often more articulate about what they do not prefer. Business angels' requirement for trust is higher (than for formal venture capitalists) because their contractual controls are generally less stringent. Formal venture capitalists are considered to be deal selection specialists who have a comparative advantage over other investors regarding the costs associated with information asymmetry. They are noted to have a large number of screening criteria, but what they espouse and what they do regarding selection differs as well.

Due diligence and valuation are key asymmetry reducing stages of the investment process. Because business angels can expect to keep all of the gains from their efforts, they have ample incentive to conduct effective due diligence. Empirical evidence, however, indicates that they check fewer references, rely on fewer technical sources of information and conduct less industry research than their formal counterparts. Some angels, however, use checklists, assistants and evidence not presented by the entrepreneur in coming to a decision. Because information asymmetry produces more variation in valuations, discrepancies regarding valuations (with entrepreneurs) is the most common reason for failing to make a deal. Formal venture capitalists are considered to be information asymmetry reduction specialists, partly because they must justify their actions to their limited partners. Their use of an ample group of experts increases their costs so the shares taken by formal venture capitalists exceeds those taken by informal venture capitalists.

Structuring and negotiation encompasses numerous topics including the establishment of discount rates which are related to expected rates of return, syndication, risk assessment, equity preferences and staging. It is not clear whether angels have an informational advantage over entrepreneurs at this stage of the investment process although some experienced angels use structured agreements from previous investments for subsequent

investments. Formal venture capitalists have significant advantages in writing contracts to provide incentives for the entrepreneur and make provisions for monitoring and governance. Syndication, which is expected to reduce angels' risks, is relatively common, as it is in the formal sector. Angels use their participation in the firm as a method of reducing unsystematic risk and they offset corresponding increases in risk with higher expectations for rates of return. Formal venture capitalists conduct risk assessments by assessing managerial capabilities, environmental threats and the length of time to exit. Convertible debentures are angels' preferred method of equity because they are a loan that has to be repaid, but can be converted to shares if the investment is successful. Preferred shares are favoured by formal venture capitalists. For the amount of money advanced, business angels acquire larger proportions of shares per dollar.

Post contractual involvements are formal and informal methods of ensuring the entrepreneurial team is performing as expected. The costs of monitoring and oversight are lessened by proximity which is often observed as a requirement for angels' investments, as well as membership on the board. Formal venture capitalists often allow the lead capitalist to monitor the investee. The numerous other monitoring functions by formal venture capitalists (accounting information, regular phone and personal contact) are exceeded by informal venture capitalists skills sets that often include part-time employment with the firm in an effort to stay in touch. Value added qualities offered by formal venture capitalists (such as information about suppliers, customers, contacts and finance) are perversely interpreted in the informal sector. Where advice is offered casually, improved exits result. On the other hand, there is little evidence that business angels intervene by overturning the entrepreneur, whereas formal venture capitalists do so frequently.

Exit methods are principally the same for informal venture capitalists as formal venture capitalists. Both angels and venture capitalists prefer IPOs, but they are elusive depending on

financial markets at the time. Trade sales are very effective methods for both groups, and both write off substantial numbers of investments as well.

The last section of this chapter reviewed the performance of the two groups on the basis of their returns. Approximately a third of reporting angels achieved IRRs in excess of 25 percent on their investment. Compared to early-stage formal venture capital funds they show better performance in most categories. Formal venture capital reports from the mid 80s to 2002 showed early-stage performing at 5.1 percent whereas development venture capital and MBOs/MBIs were achieving averages of 10.6 and 14.2 percent respectively. Three features complicate the comparability of the two sources of returns. First, formal funds have to report fund results which include poorly performing investees whereas angels generally report only exits. Second, older investments would be divested by formal venture capitalists, but angels can hold them indefinitely. Third, there is no transparency in the (complicated and confusing) calculation of returns for informal venture capital investors.

The summary highlighted the range of angel behaviour which is more diverse than that of professionally mandated formal venture capitalists, suggesting angels are a heterogeneous group of investors. The differences in samples (Mason & Harrison, 1997a) and geography will be the source of some discrepancies. Others sources of heterogeneity are the subject of this thesis. The next chapter investigates issues of scale in the form of the relationship between appraisal, success and re-investment.

3 The Nature of Habitual Activity Regarding Entrepreneurs and Business Angels

3.1 Introduction

Chapter 2 provided an comprehensive overview of equity provision by informal venture capitalists using Wright and Robbie's (1998) model as an outline. This overview summarised deal generation and search, due diligence, structuring and negotiations, governance, exits and returns. No attempt was made to review the formal venture capital literature exhaustively, however, it is clear that the theoretical range and depth of study is far greater for formal venture capital than for informal venture capital. Within the developing angel literature, the principal focus has been on defining and enumerating the informal investment phenomenon. While this is to be expected for relatively new fields of study, it has led to a relatively sterile discussion limited largely to the prevalence of the phenomenon and its benefits. Only the most recent research is beginning to explore the depth of the field and its numerous contexts.

The focus of this chapter is to extend the discussion of informal venture capital investors by using the information-based theory of the existence and health of the venture capital industry as proposed by Amit, Brander and Zott (1998). Using their theory as the basis for the investigation, the importance of habitual angels for industry vitality is revealed. This is the first examination of habitual business angel activity that takes an ample sweep of the circumstances under which investments are made including process, context and motivations.

The chapter proceeds as follows. First, future discussions of multi-investing angel activity are assisted by a review of the literature, and a classification system is proposed to readily identify various types of serial angels. Following this, Amit et al.'s (1998) theory is extended to include the informal venture capital industry. Following that, the relevance of habitual entrepreneurship to the study of business angels is discussed. The habitual entrepreneurship

literature has progressed beyond enumerating the incidence and magnitude of the phenomenon and the traits and characteristics approach. The current dialogue in the habitual entrepreneurship literature has evolved towards a process orientation which is not yet reflected in the business angel literature suggesting directions and implications for the study of multi-investing informal venture capital investors.

3.2 Advancing a New Typology

Different works have drawn attention to numerous types of informal investors and have developed various classifications and name schemes (Gaston, 1989; Postma and Sullivan, 1990; Stevenson and Coveney, 1994; Landstrom, 1992), thereby recognising the heterogeneity of angels (Freear and Wetzel, 1992). The heterogeneity of angels has been approached using a variety of qualities or characteristics such as entrepreneurial and non-entrepreneurial angels (Sullivan, 1991), angels who invest in technology (Freear & Wetzel, 1990) and more recently, isolating angels that specialise in takeovers and turnarounds (Visser & Williams, 2001). Other attempts at defining heterogeneity make provision for investors who invest more than once. For example, Stevenson and Coveney's (1994) 'entrepreneurial' angel is an habitual because s/he makes an average of one investment per year. Van Osnabrugge (1998b) and Kelly and Hay's (1996a) 'serial' angels are identified by having made three or more informal investments. Gaston (1989) classified angels into 10 categories of various descriptions, some of which included the multi-investing angel. Kelly and Hay's (2000b) multi-investing angels were coined 'deal makers.'

There are substantial numbers of multi-investing investors amongst the ranks of angels in general. Coveney et al. (1994) report 62 percent incidence of serial angels. Van Osnabrugge (1998) and Kelly and Hay (1996) observe that serial informal investors, whom they refer to as serial or multiple investors respectively, make more significant contributions to new ventures (than novices) because of the number of individual investments they make and the total

amounts of capital they invest. Coveney et al. (1994) go as far as to suggest that policy efforts should be refocused on the more substantial players rather than on the smaller, more infrequent angels. Clearly, serial investors are important phenomena. Kelly and Hay (1996), van Osnabrugge (1998) and Stevenson and Coveney (1994) have drawn attention to serial angel issues such as syndication, comparisons with formal venture capitalists and general characteristics respectively.

3.2.1 Novice and Habitual Business Angels

The titles given to serial informal investors may be too simplistic given developments regarding habitual entrepreneurs (Westhead & Wright, 1998; Wright, Robbie, & Ennew, 1997b) where the notation has become more specific and descriptive highlighting meaningful differences amongst entrepreneurs. The entrepreneurship literature classifies entrepreneurs on the basis of two criteria: the frequency with which entrepreneurial acts take place (Hall, 1995) i.e. one entrepreneurial act or more; and the timing and sequence of their repeat ventures (Westhead & Wright, 1998) i.e. whether or not the first venture has been disposed of before the second or subsequent is undertaken. Thus, novice entrepreneurs are those that are in the midst of, or have exited, their first start-up. Serial entrepreneurs dispose of one venture before another venture is started, and portfolio entrepreneurs maintain ownership of the first or previous venture while embarking on another.

To engage in a more comprehensive understanding of re-investing informal venture capital investors, it is useful to develop a standardised typology based on substantive conceptual differences. Differentiating between types of informal investors on the basis of their re-investing behaviour assists in the pursuit of issues related to heterogeneity. To study the heterogeneity of investment versus re-investment, the second investment is the defining item (rather than the third or fourth). Information relating to informal investment may be unequally distributed amongst angels who have invested before (re-investing) and angels who

have not (first-time investors). For example, knowledge acquired via adverse selection and moral hazard are likely to be better understood by re-investing business angels rather than by first-time investing business angels. Thus, angels' investment/re-investment status is an important criterion. Intentions to re-invest helps define those who have/have not reached the end of their investment careers.

As noted in Chapter 2, a key feature of business angel investment success relates to the ability to exit and timing of the exit. Exits are important to business angels because the inclination to hold investments indefinitely, sometimes without promise of an exit, is a feature that sometimes plagues business angel investments (Mason & Harrison, 2002). Illiquidity issues of the inefficient marketplace make managing exits an important quality for successful business angels. Their ability to manage exit options and do so with appropriate timing has considerable impact on their returns. The fact that some business angels manage more than one investment concurrently (by not awaiting the exit of a previous investment) implies that the information derived from one investment is not necessary for the exit or subsequent investment of the others. Thus, a number of criteria emerge with which to develop a new typology related to investment and re-investment: 1) the investment (first) versus re-investment (the second investment) including the intention to re-invest, and 2) exit priority before re-investing.

Using the entrepreneurship terminology and the foregoing concerns regarding the information related to investment and re-investment, a new typology is proposed. Two primary categories are developed using frequency of investment as the criterion: 1) *novice* informal investors are angels who have made one unquoted investment to date; and 2) *habitual* investors have made more than one unquoted investment to date. Each of these two groups are further subdivided. Novice angels are further differentiated on the basis of their intention to re-invest, thereby creating *one-time* and *first-time* informal investors. One-time angels do not intend to make another informal investment, and first-time angels expect to make another investment, but

have yet to do so. Habitual angels are further differentiated on the basis of the sequence or concurrence of their investment activities. *Serial* angels have re-invested only after they have exited a previous investment. *Portfolio* angels maintain a portfolio of investments concurrently without regard for previous exits. Table 3-1 illustrates the various categories in the typology. This typology is a novel means of studying business angels and augments the conceptually derived typologies previously discussed.

Table 3-1: Typology of Informal Investors

Classification	Sub-Classification	Description
Novice Angel (one investment)	One-Time Angel	One investment to date with no intention to re-invest
	First-Time Angel	One investment to date with intentions to re-invest
Habitual Angel (more than one investment)	Serial Angel	Re-invests only after exiting previous investment
	Portfolio Angel	More than one informal investment on-going at once

One-time angels are those who have invested once and know, either during the investment or subsequent to it, that they will not invest informally again. They may, or may not, have exited. Their decision not to re-invest could be the result of a bad experience with an entrepreneur, lack of sufficient funds to invest, an exit which resulted in a poor return, or lack of an exit on the horizon. If an angel had some personal involvement or interest in the entrepreneur or the project, their motives for re-investing may have evaporated. Alternatively, too many other resources may have been invested (i.e. money, time and advice) while monitoring, or a better opportunity for use of the time and resources may have emerged.

First-time angels may, or may not, have exited their first informal investment, but intend to re-invest. First-time angels do not necessarily know the source or timing of their next investment, but personal motivations or experiences motivate them to be interested in further investment activities. Numerous motivations could cause them to plan to re-invest. They may have had positive experiences with the entrepreneur, or are enjoying the responsibilities and activities required of them. Additionally, the investment may be experiencing significant growth. Alternatively, they may have exited and are excited about the return and future opportunities. On the other hand, the first-time angel may dislike the current situation, entrepreneur, industry or return, but see merit or potential in future investments causing them to want to invest again. First-time angels are potential habituals, either serial or portfolio, if they act on this intention in the future.

Serial angels exit an investment before committing themselves to re-investing and have done so already at least once. The exit may include failure, bankruptcy, or spectacular success. The returns achieved may be negative, break-even, or positive. The reasons for serial angels method of re-investing may include: waiting for the returns from one investment before engaging in another because the capital is necessary for re-investment; outcomes of a previous investments having an impact on future unquoted investments; being highly involved in the entrepreneur's business may necessitate the ability to handle only one investment at a time; being highly involved with non-investment-related activities; or preferring to devote all their energies to one investment instead of many. There is little literature to guide this discussion since the limited study of habitual angels has not focussed on the concurrence of their re-investment habits.

Portfolio angels hold more than one investment concurrently. They do not wait to exit one investment before moving on to another. The reasons for portfolio investing could be varied though one fact is obvious, portfolio informal investors have the funds to engage in simultaneous investing. They may have little involvement in the ventures and may therefore

be capable of handling more than one investment at a time. Alternatively, exceptional managerial skills may cause them to believe they have the abilities to manage more than one investment concurrently. Managerial skills aside, portfolio angels may feel they must make several investments to ensure a profitable payoff.

3.2.2 Improvements Over Previous Classifications

The classification scheme outlined in Table 3-1 is a significant development over previous classifications (Gaston, 1989; Kelly & Hay, 1996a; Stevenson & Coveney, 1994; Van Osnabrugge, 1998b; vanOsnabrugge, 1998b) in three ways. Firstly, it provides for more meaningful distinctions between groups by employing concise and useful criteria, thereby determining heterogeneity by use of important investment characteristics. Secondly, this classification does not include virgin angels -- those who have never made an informal investment -- though it would be easy to include them in individual studies where desirable. Thirdly, it relaxes the requirement for an angel to be currently active to be included.

Firstly, this classification more accurately differentiates between groups by removing arbitrary distinctions (as described by Van Osnabrugge, 1998a) regarding numbers of investments and it also provides for a more meaningful differentiation within each major sub-group by providing a single defining criterion within each sub-group -- intention to re-invest in the case of novices, and exit timing in the case of habitual investors. In previous studies, three investments were the required number to qualify as a 'serial' (habitual) investor (Kelly & Hay, 1996a; van Osnabrugge, 1998a; van Osnabrugge, 1998a). Emotionally, intuitively and intellectually, there would appear to be a greater difference between the first and second investment than between the second and third investments. This research attempts to avoid subjective distinctions about the number of investments that constitute for example, serial angels (three investments or more), non-serials (one or two investments) (Kelly & Hay, 1996a; van Osnabrugge, 1998a), or deal-makers (greater than 10 investments) (Kelly & Hay,

1996a). Rather, this research focuses standardises angels' status by their investment/re-investment activities. Using an investment/re-investment distinction, the individual biases and varying interpretations used by scholars in previous studies are resolved. The invest/re-invest characteristic is not ambiguous, nor does it require a definition. After the first investment, an investor has to decide whether they are interested in further risk investment of this type. Also, the investor may know whether the requirement to manage an entrepreneurial relationship is an investment option they enjoy, are good at, or find rewarding. Likewise, a poor first experience may inhibit an angel from re-investing. Here it is argued that distinguishing investment defining multiple investment activity is the second, not the third or the fourth, or any later investment.

Second, the typology does not include 'potential' or 'virgin' angels. Informal investors and potential informal investors share similar attitudes, although varying in magnitude and intensity (Freear, Sohl, & Wetzel, 1994). Potential angels, however, may be perpetual window shoppers -- always looking for, but never finding, the perfect conditions to make an informal investment. For example, some virgin angels have been known to seek virtually ideal conditions -- more knowledge and trust in the entrepreneur, better exit routes, and more opportunity to co-invest with experienced investors (Coveney et al., 1996). This is not to imply that virgin angels are not worth investigating, on the contrary. However, a typology that seeks to establish the nature of investment heterogeneity needs first an investment.

Lastly, this classification improves over studies that require angels be 'active' in order to be included in the sample (Fiet, 1995a; Harr et al., 1988; Sullivan & Miller, 1990; Van Osnabrugge, 1998a). Active angels have been defined as those who have made investments within an arbitrarily determined period of time. For example, Van Osnabrugge (1998a) used a three-year period to define active. Studying only those who have made investments within a relatively short period of time can lead to a potential mis-classification of some angels. Use

of the ‘active’ criterion can disqualify angels who made a ‘patient’ capital investment more than three years ago and who are still in possession of the investment. Their investment-exit-re-investment cycles are longer than the specified period arbitrarily set by researchers. This criteria has the potential to bias data. It is possible, therefore, that previous observations about habituals may have over-emphasised portfolio investors (who only would have been included because they invested several times within the specified time period). The improved method here more accurately represents habitual and novice investors because the elapsed time since their last investment does not have the potential to disqualify them. Furthermore, McGrath (1999) points out that from an industry- and firm-level perspective, limiting the study of uncertainty resolution (angel’s success or failure) to a period immediately following the activity (three or five years) may reduce opportunities to determine lessons learned because improved performance is often incremental over several actions (subsequent investments).

This section has reviewed the development of a new typology based on criteria to examine heterogeneity as it relates to investors’ subsequent investment activities and the concurrence of their actions. This is a unique and meaningful typology that solves a number of issues related to the non-systematic use of terminology that has been developing in the literature. The nature of investment versus re-investment, and exit, have a very important role in the more theoretically-advanced formal venture capital literature. Formal venture capitalists require successful initial investments in order to re-invest. The review of this theoretical perspective about the nature of the formal venture capital industry, and how re-investment hinges on initial investments, is explored in the next section.

3.3 Venture Capital Industry Driven by Re-investment

Formal venture capitalists’ develop specialised skills in due diligence and appraisal (as well as other qualities exhibited after the investment) that make them particularly suited to

investing in high risk investments in an effort to achieve large rates of return (Westhead & Wright, 1998). Amit, Brander and Zott (1998) theorise, using an information-based model, that the formal venture capital industry would “fail” from poor industry returns if the deleterious effects of adverse selection were widespread. Theoretically and empirically, they illustrate that skilled due diligence (appraisal) enables some venture capitalists to isolate high potential projects. Those who perform effective and efficient due diligence are able to ascertain profitable projects at a lower cost. These firms produce better information at a similar or lower cost than other formal venture capitalists who are not as talented at delivering due diligence. Thus, venture capitalists who are efficient and effective at making investments in due diligence invest in better opportunities and become more successful firms.

Amit et al. (1998) go on to theorise that these venture capitalists succeed in generating good returns, build reputations on that basis, and go on to raise more funds and conduct more investments. Favourable rates of return and successful investments have favourable repercussions at the industry level since the presence of these more successful, multi-investing venture capitalists supports the formal venture capital industry’s continued viability. Those whose appraisal talents are neither effective nor efficient do not have the same cycle of success and therefore abandon the industry.

This information-based model has implications for the habitual investment activity of business angels as well as the existence and success of the informal venture capital industry¹². An information-based model adapted for informal venture capital investors would suggest that angels who are efficient and effective at due diligence will execute successful investments by being able to exit and will become flourishing capital providers, thus supporting the existence of the informal venture capital industry. Those with expert abilities

¹² Though angel activity is rarely referred to as an industry because of the invisibility of the investors, and the inefficiency of market due to poor information circulation, there is precedent in applying Porter’s forces of competitiveness to the industry (Farrell, 2000) similar to that of the formal venture capital industry (Wright & Robbie, 1996).

to overcome informational asymmetries and interpret information appropriately will produce good exits and returns. The presence of successful and profitable business angels who continue to re-invest provides the basis for a viable and vital informal private equity industry.

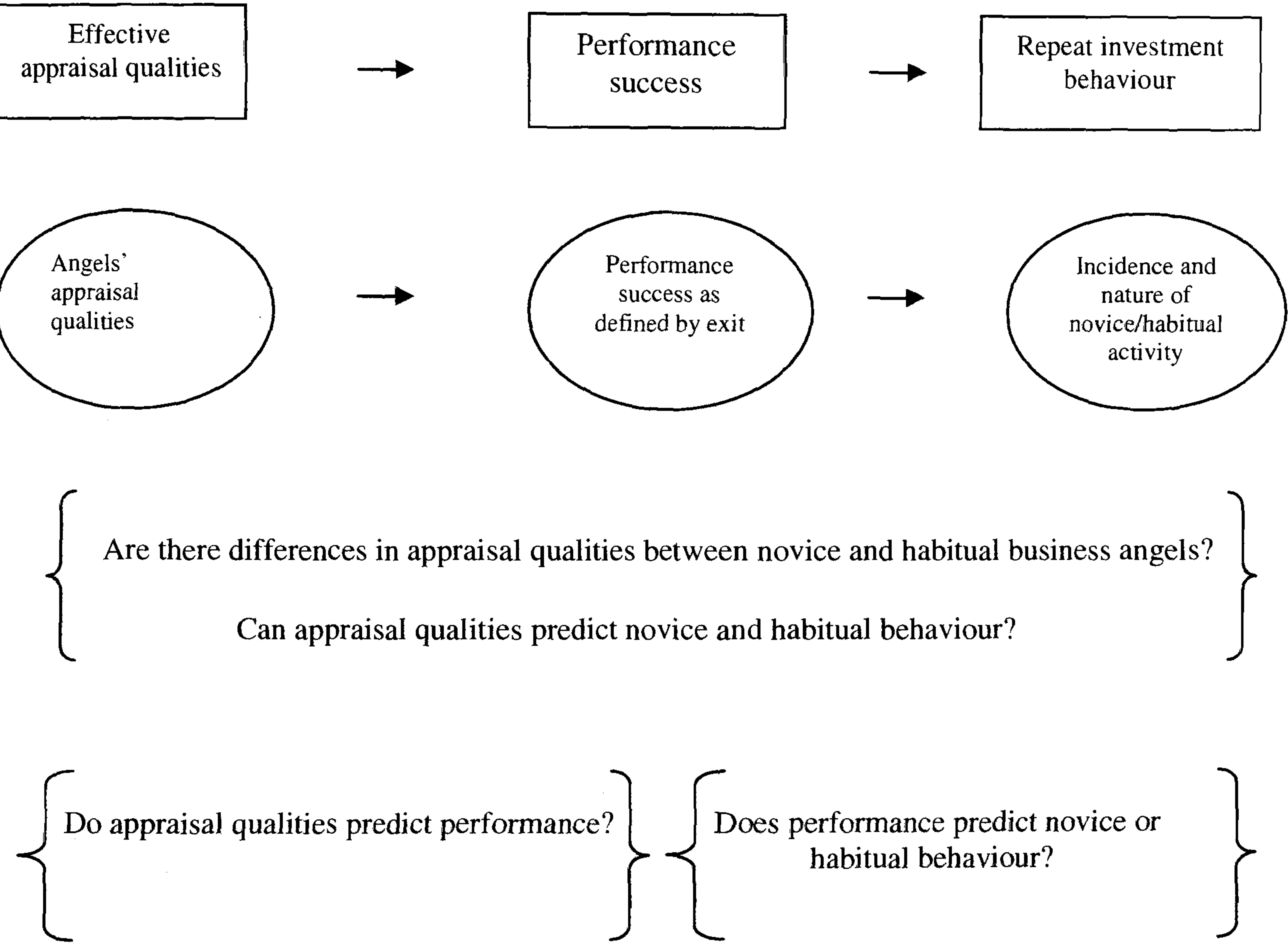
The relationships and questions raised by the application of Amit et al.'s (1998) theory to informal venture capital are illustrated in Figure 3.1. The three boxes represent the information-based argument about the vitality of the formal venture capital industry as proposed by Amit et al. (1998). Venture capitalists who are effective and efficient appraisers of deals will lead to performance success of their funds. The success of their funds permits them to raise new funds and re-invest. Their success and re-investment promotes the vitality of the formal venture capital industry.

The three ovals represent the equivalent argument adapted to an informal venture capitalist industry. Effective appraisal qualities (pre-decisional) exercised by informal venture capitalists should promote successful investments. The success of initial investments encourages (or permits) them to re-invest. Engaging in re-investments promotes the business angel industry's vitality with successful and informed business angels. Thus, a vibrant industry is created by competent angels who are successful and re-invest.

The brackets below indicate the research questions that are addressed by the relationship between each of the steps. The first question investigates the nature of differences in appraisal qualities between novice and habitual angels. The overall question of whether novice and habitual behaviour is associated with their ability to conduct appraisal is reflected by looking at their appraisal capabilities and their inclination to be novice or habitual. Investigating appraisal qualities and their relationship to successful performance answers the question of whether there are some qualities that business angels conduct that are systematically associated with success. The last question, whether successful performance in

an informal investment precipitates re-investment, is considered by investigating the relationship between the latter two variables.

Figure 3.1 - Model Informal Venture Capital Industry Vitality Adapted from Formal Venture Capital Industry



There is evidence that such a model may apply to angels. Relative to novices, habitual angels in non-representative samples have been shown to have more entrepreneurial experience, higher initial return expectations, an ability to reduce risk by conducting more industry research, and preferences for co-investing (Van Osnabrugge, 1998a). Furthermore, the possible experience effects to which habitual angels may be subjected (Kelly & Hay, 1996a) has led some to hypothesise that habitual angels choose better investments and entrepreneurs,

are better negotiators, write better contracts, and produce more fruitful returns (Van Osnabrugge, 1998a). The apparent differences between novice and habitual business angels suggest their heterogeneity should be explored as it may have important implications for financing young firms and the industry at large.

In assessing which appraisal qualities are important to investigate, a review of the habitual entrepreneurship literature demonstrates a movement towards investigating process and context variables. This review informs the nature of the appraisal qualities which will be studies regarding habitual business angels.

3.4 Habitual Entrepreneurship

Entrepreneurship is relevant to the study of informal venture capital investment because of the similarities in investment profiles shared by entrepreneurs and business angels, and because of the entrepreneurial background that they often share. Firstly, angels, like their investees, become equity owners, share the new ventures' risk proportionately, and are often actively involved in the venture. These investments, often in early stage ventures, typically do not produce adequate returns and often produce total losses. Complex situations, uncertain environments, a lack of historical information and the necessity for prudent but fast decision-making characterise the scenarios in which entrepreneurs act. Not coincidentally, these are identical to the scenarios angels encounter. Thus, the scenarios and conditions under which entrepreneurs and informal investors operate are very similar. Opportunity-identification, start-up, and new venture execution are highly uncertain environments for both entrepreneurs and their investors. The practice of investing in entrepreneurial ventures entails significant market and agency risk (Fiet, 1991; 1995). In fact, angels' roles as the financiers are often more risk laden than the entrepreneurs' (Schumpeter, 1934). Likewise, angels are observed to commit large investments (Harrison & Mason, 1992; Riding et al., 1993; Wetzel, 1981) sometimes after reviewing only a few proposals (Seymour & Wetzel, 1981). These arguments

suggest that the circumstances and situations in which entrepreneurs and angels find themselves are very similar.

Secondly, a cohort of angels is consistently identified as former, or current entrepreneurs (Landstrom, 1993; Lumme et al., 1996; Mason et al., 1991; Neiswander, 1985; Short & Riding, 1989; Stevenson & Coveney, 1994; Sullivan, 1991; Van Osnabrugge, 1998b; Wetzel, 1981)¹³. Entrepreneurs become angels, and to the extent that that they do, they may share similar characteristics, behaviours, processes and motivations to be identified. Mason and Harrison (2006) present case study evidence of cashed-out entrepreneurs who have become business angels as their post-acquisition wealth is recycled in their community. This rationale emphasises the importance of the entrepreneurial literature to the business angel debate.

The central themes in habitual entrepreneurship have focussed on the scale of the phenomena and the personal characteristics and backgrounds of entrepreneurs (Cross, 1981; Schollhammer, 1991; Westhead & Wright, 1999b) as well as contextual and process oriented research (Amit, Glosten, & Muller, 1993a). Some suggest that it is important to understand why some people can discover, create and exploit opportunities repeatedly and research emphasis should highlight differences between entrepreneurs and non-entrepreneurs as it relates to knowledge, cognition and behaviours (Shane & Venkataraman, 2000; Venkataraman, 1997).

A comprehensive review of habitual entrepreneurship in the UK by Westhead and Wright (1999a) reviewed the literature regarding the milieu within which entrepreneurs make their decisions including motivations, cognitive processing heuristics, opportunity search and habitual entrepreneurs' abilities to learn from previous experience amongst others. The following discussion of habitual entrepreneurs is intended to inform the later discussion of

¹³ In Landstrom's (1993) work in Sweden, almost all angel respondents were entrepreneurs and 45 percent had started more than *five* businesses.

multi-investing business angels because of the large number of angels who are entrepreneurs and because of the similarity of the contexts in which they are involved. By reviewing progress made in the habitual entrepreneurship discipline, business angel research may be advanced more rapidly. The discussion regarding habitual entrepreneurs begins by reviewing the process and context of their activities such as motivations and opportunity search qualities, the more recent forays into cognitive discovery, and their potential to learn from previous experiences.

3.4.1 Motivations

To the extent that angels have entrepreneurial backgrounds, it is important to review the entrepreneurship literature regarding motives. A variety of motivations and characteristics of habitual entrepreneurs are explored in Westhead and Wright (1998; 1999b). Portfolio entrepreneurs, those who engage in more than one entrepreneurial endeavour concurrently, are significantly more likely to be interested in influencing and contributing to the welfare of their communities, as well as to have a greater perceived instrumentality of wealth. The motivations of rural and urban entrepreneurs have been observed to vary significantly as well.

Some motivations for wealth and business growth are facilitated by habitual entrepreneurship because sector or fiscal constraints prevent entrepreneurs from expanding in established business areas (Scott & Rosa, 1996). Case study evidence of motivations for subsequent projects by habitual entrepreneurs include interests in growing businesses organically with management and strategic changes, as well as developing a clusters of businesses by acquisition (Wright et al., 1997b). The work to date has not yet explored the dissimilarities in motivations from one investment to the next. Admittedly this is hard to examine as entrepreneurs are confronted with recalling subtle changes in motivations about actions that have taken place many years ago which may be subject to biases in recall. The varied results

allude to the heterogeneity of habitual entrepreneurs which has implications for the variety of motivations and heterogeneity of business angels.

One of the first inquiries into angels' motivations was embodied in Wetzel and Seymour (1981) and Tymes and Krasner's (1983b) replication of non-financial rewards. These were comprised of socially benevolent motives such as employment problems, urban renewal, entrepreneurial support (minorities and women) and contributions to technology. When financial motives were excluded, respondents from both California and New England identified supporting employment, contributing to technology and aiding an entrepreneurs as their key motivations for informal investing. *Non-investing* angels' motives for *not* investing were principally the inability to find firms, the high risks, no liquidation guarantees and a lack of appraisal expertise (Mason & Harrison, 1993b). Both of these studies examined motives for investing relative to not investing. However, there is a tendency in some studies to use motivations synonymously with investment criteria (Riding et al., 1993 for example). Thus, the incentive to engage in informal investment activities at a particular point in time (the former two examples) is treated the same as the specific criteria an angel uses for selecting one investment over another (the latter example). The latter assumes angel activity where the former do not.

Little attention has been devoted to how motivations change with respect to re-investment and whether subsequent projects or predispositions change motivations. Thus, the trend regarding habitual entrepreneurship and the gap regarding predispositions and changes in motivations suggests opportunities for the informal venture capital literature to broaden its boundaries.

3.4.2 Deal Generation

The search characteristics used by entrepreneurs are thought to reduce the risk, uncertainty and ambiguity surrounding a new venture. Because an individual's previous experiences

positively influences their search for information and opportunities (Cooper, Folta & Woo, 1995), one expects that habitual entrepreneurs will be more accomplished in conducting subsequent searches for new opportunities (Westhead, Ucbasaran, Wright & Binks, 2005; Westhead & Wright, 1999a). There is growing evidence for this conjecture. In a large sample of entrepreneurs in the UK, habitual entrepreneurs were found to be more 'alert' to identifying opportunities (see Kirzner, 1997), identified greater numbers of opportunities, and tended to be more innovative than their novice entrepreneurial counterparts (Ucbasaran, Wright, & Westhead, 2003).

Interesting anomalies arise regarding repeat entrepreneurship when situations and circumstances vary – as they are bound to -- from one entrepreneurial experience to another. For example, re-investment may be an attempt to repeat a favourable event, or may be an attempt to improve on or learn from a previous situation. Wright, Robbie and Ennew's (1997a) exploratory work highlights problems experienced by serial entrepreneurs in attempting to emulate earlier successes under changed conditions. More surprisingly, entrepreneurs who start subsequent ventures in industries unrelated to previous ventures have been found to have higher success rates than those who form new ventures in industries related to their original venture (Schollhammer, 1991). These variations may result from habitual entrepreneurs bringing previously-used information and techniques to similar industries under new conditions. The new conditions do not support the old information and techniques. On the other hand, habitual entrepreneurs operating under new conditions, new ventures and new industries, may force habitual entrepreneurs to operate with new practices that are more suited to the current situation.

Deal generation is the opportunity search process of the informal venture capitalist and was discussed in Chapter 2. The adeptness of opportunity identification by habitual angels may provide significant insight into their habitual activity, their desire to repeat favourable events, or their efforts to learn from one investment to the next. Deal generation provides sufficient

opportunities to review to mitigate informational disadvantages. Additionally, more complex multi-variate investigations may reveal the influences between variables on habitual angels' deal generation activities.

3.4.3 Cognition

Cognition is another area focussed upon by Westhead and Wright (1999a) in their review of habitual entrepreneurship. The cognitive perspective has been the source of rapid advances in other fields related to human behaviour and current thought suggests it may provide similar benefits to the study of entrepreneurship (Baron, 2004b). Cognition is the process by which individuals obtain, store, process and utilise information (Matlin, 2002), and the cognitive perspective is a particularly useful theoretical framework to explain the association between entrepreneurship and creativity (Ward, 2004). Cognition is also a promising construct to accompany popular theories such as agency theory to explain entrepreneurial behaviour (Wright, Hoskisson, Busentiz and Dial, 2001). Baron (2004) provides a broad conceptual overview of how various cognitive concepts may contribute to our understanding of why entrepreneurs start businesses, how they are able to see opportunities, and why some are considerably more successful than others. In this section, cognition is implicated as having considerable consequences for explaining how entrepreneurs make decisions, and particularly how they differ from those of managers.

The initial stages of decision-making require forecasting possible futures and available choices to generate predictions, but because individual human capacity to process information is limited, heuristics are employed to reduce the strain. Heuristics are decision-making rules of thumb and short cuts (Busenitz & Barney, 1997a) used by decision-makers to simplify information processing. Heuristic judgement theory considers the rules of thumb that individuals use to make these forecasts and how the decision weights are applied (Harvey, 1998). The strain-reducing actions can produce sub-optimal decisions, however, referred to

as biases. Uncertainty and highly complex situational conditions are criteria for employing heuristic decision making (Kahneman, Slovic, & Tversky, 1982) which is an apt description of the appraisal process of angels' investments. This is in contrast to the organisational level where firm-wide policies and document control procedures constrain heuristic thinking by requiring written records of deliberations (Fischhoff, 1982).

A number of empirical studies regarding heuristics (Busenitz & Barney, 1997a; Busenitz & Lau, 1996; Cooper, Woo, & Dunkelberg, 1988; Manimala, 1992; Markman, Baron, & Balkin, 2000) have attempted to refine the qualities of cognition between various comparator groups. When compared to high-level managers, Busenitz and Barney's (1997a) entrepreneurs displayed significant tendencies towards the use of representativeness (generalising from few non-random samples) and over-confidence (over-estimating their ability to correctly assess situations). In an effort to study heuristics but control for the innovation that influences entrepreneurs, Markman et al. (2000) compared patent holders who had started companies (innovative entrepreneurs) with patent holders who had not started companies (innovative non-entrepreneurs). Innovating entrepreneurs are less overconfident than innovating non-entrepreneurs due to a greater awareness of the boundaries of their knowledge, it is thought.

These findings were extended with a sample of new venture entrepreneurs who were compared with new venture managers as regards overconfidence and a number of independent variables (Frobes 2005). The presence of external equity investors and age were negatively associated with overconfidence whereas the level of decision comprehensiveness in the firm was positively associated with overconfidence. Clearly, as seen in the studies mentioned here, the comparison group has a considerable effect on the ability to predict tendencies toward heuristic thinking and resulting biases since the results vary.

Entrepreneurs have also shown orientations towards organic growth, reliance upon intrinsic innovation (as opposed to externally imposed incentives), goals (though not the process) (Manimala, 1992), self-efficacy and alertness (Markman et al., 2000).

Newer studies assess novice and habitual entrepreneurs' cognitive style and entrepreneurial drive. Manufacturing entrepreneurs who scored high on entrepreneurial drive were significantly more cognitively intuitive than entrepreneurs who did not score high on the entrepreneurial drive construct. No differences were found amongst novice, serial and portfolio entrepreneurs as regards cognitive style though novices scored significantly less on entrepreneurial drive (Doyle, Fisher, & Young, 2002). Cognitive styles vary on a continuum from *intuitive* (characteristic of right brain orientation, feelings and a global perspective leading to immediate judgement) to *analytical* (characterised by detailed mental reasoning and a left brain orientation) (Hayes & Allinson, 1994). Cognitive styles are consistent preferences for arranging and processing information and experiences and are "stable attitudes, preferences or habitual strategies determining a person's typical mode of perceiving, remembering, thinking and problem solving" (Messick, 1976 p. 5).

Cognition is expected to play a role in the decision making processes of informal venture capitalists as well since cognition, or cognitive styles, may influence how business angels decide to make investments and whether or not they make subsequent investments. It may also explain why similar information sought for investment appraisal by business angels (such as market data, pro forma statements, industry analyses, for example) is interpreted differently. It may even be helpful in identifying their abilities to select successful opportunities. If pursuit of the cognitive perspective is as rewarding for investors as it has been in developments regarding entrepreneurship, cognition may more aptly differentiate cohorts of angels than demographic, psychographic, or investment profiles.

3.5 Conclusion

This chapter proposed a typology that offers a meaningful classification for business angels that will be used in this thesis. It is meaningful in that the criteria used to develop the

classifications are important and central to angels' overall performance and re-investment.

The investment/re-investment decision rests between the first and second investment and is a more objective and distinct criterion than used in previous studies. Angels' intentions to re-invest based upon their first experience further reduces ambiguity about the nature of the novice angels. Angels' propensity to exit before re-investing (or not) reflects on the angels ability and resources to manage investments concurrently or serially.

Using this typology, a model of re-investment is extrapolated from the theory of the existence of the venture capital industry as proposed by Amit et al. (1998). The adapted theory suggests that the health of the informal venture capital industry results from successful habitual angels engaging in repeat investing behaviours. Their success, in turn, is based on a variety of successful appraisal qualities. In attempting to identify appraisal qualities that may prove useful, the entrepreneurship literature was consulted which has a greater history in investigating repeat activity.

Habitual angels are important because of the larger amounts of funds they devote to the industry due to their re-investment. The literature on habitual entrepreneurship finds new directions by investigating process, context and cognitive elements (Wright et al., 1999).

These appraisal qualities have an impact on understanding habitual behaviour because they represent the capacity for business angels to make good selection decisions and be rewarded with successful investments. The arguments proposed in the next chapter offer testable hypotheses to examine the relationship between appraisal and habitual behaviour.

4 Hypotheses Generation

4.1 *Introduction*

This suggests the importance of studying habitual angels' appraisal efforts may point to the continued existence of the informal venture capital industry. As was explored in Chapter 3, habitual behaviour is tentatively linked to effective appraisal which causes successful investing, thus precipitating re-investment. Since contextual, motivational and process elements currently guide the habitual entrepreneurship literature, similar variables were identified for further study as regards habitual business angels. The purpose of this chapter is to develop testable hypotheses regarding appraisal qualities, their affect on habitual behaviour and performance, and the effect of performance on habitual behaviour. The derivation of the hypotheses draws from the entrepreneurship literature (Chapter 3) as well as the venture capital literature (Chapter 2).

The hypotheses developed in this chapter alter the unit of analysis from the investment to the investor -- a move that is likewise evident in the portfolio entrepreneurship literature (Carter & Ram, 2003; Westhead & Wright, 1999a). The chapter begins by focusing on qualities that are related to the appraisal process (motivations, deal generation and cognition) and how they may impact on business angels' subsequent habitual behaviour. The following section outlines hypotheses related to appraisal qualities and the performance of the investment. This is followed by speculations on how an angel's performance may affect their habitual behaviour. Each of these major sections represents a different component of the major questions addressed in the model in Figure 3.1. A summary of the hypotheses concludes the chapter.

4.2 *Appraisal Qualities and Habitual Behaviour*

Drawn from the entrepreneurship literature, the three general areas of the appraisal process selected for study are motivations, deal generation and cognition. This is a broad array of appraisal qualities utilised to 'cast a wide net' in order to avoid missing an important attribute unknowingly. Formal venture capital firms have policies, objectives and guidelines which drive their investment decisions. Business angels have no such formal procedures and so their motivations are used as the proxy for fund-raising principles (Section 4.2.1). Deal generation largely determines the types of deals to which venture capitalists and angels are exposed and represents a significant appraisal strategy (Section 4.2.2). Venture capitalists use cognition to assess the large amounts of information to which they are exposed which is expected to influence the decisions they make (Section 4.2.3).

4.2.1 Motivations

Limited partners do not have active operating privileges in formal venture capital firms, and therefore have specific requirements for information from their general partner agents. Their information needs are formalised by the development of fund objectives, the creation of procedures to ensure objectives are implemented, and controlling processes using appropriate documentation. These organisational systems for information permit principals to ensure legitimate practices are being observed and shareholders' interests protected. The intentions of the funds' general partners are the basis on which they raise funds from limited partners and these intentions are articulated by fund objectives. Records and documentation necessitate adherence to the objectives. Due diligence investigations also serve to ensure that the parameters of the investee are aligned with the fund objectives by the funds' general partners. Moreover, the multi-investing cooperative behaviour required by the formal venture capital industry is motivated by risk-sharing concerns (Lockett and Wright, 2001) and financial concerns (Wright and Lockett, 2003). The ongoing collaborativeness tightly aligns firms' motivations and re-investment opportunities in a dynamic environment.

As an individual investor (rather than one governed by organisational processes) angels motives represents the fund objectives used by formal venture capitalists. Business angels' investment activities are driven – not by the procedures, objectives, and policies that define company policies – but by their personal and individual objective functions. Business angels do not have limited partners to whom they must outline their investment policies, nor do they have organisational systems necessary to ensure the adherence to these motives.

Furthermore, because business angels are not specialised financial intermediaries with professional experience in intensively scrutinising firms (Lerner, 1998), their motivations are not likely to be well articulated, nor documented, since they have no need to write them in minute books or strategy documents.

Classical financial theory suggests that investors' primary motive is to maximise wealth (Fama & Miller, 1972). Venture capital executive are motivated not only by fiduciary obligations, but by future funding considerations and continued employment as well (Dixon, 1991; Wright & Robbie, 1996). Formal venture capital executives' objectives include maximising returns to the fund for the general and limited partners, a responsibility which weighs heavily on the fund managers and their future prospects. Producing high returns is also important in order for formal venture capital executives to ensure continued employment as the fund managers, and to secure future capital-raising capabilities by demonstrating successful past experiences.

Novices' Motivations

Portfolio entrepreneurs are more interested in generating personal wealth than other entrepreneurs (Westhead, Ucbasaran, Wright & Binks, 2005) which suggests financial motivations on the behalf of habituals that are not shared by novices. Thus, novice angels may be more likely to be less financially driven. There is widespread agreement that economic decision making expected of individual investors at the normative level does not match that which is experienced at a descriptive level (De Bondt, 1998; Hastie & Dawes,

2001; Lewin, 1996; Schwartz, 1998). For example, individual investors are known to trade on information rather than news (Black, 1986), sell winning stocks early and hold losing stocks too long (Shefrin, Statman, & Constantinides, 1985), and respond to investment fads instead of sound investment principles (Shiller, 1984). In one study, individual investors' were overoptimistic about the performance of their own stock compared to the Dow Jones Industrial Average, did not use betas or co-variation in compiling portfolios, and were of the opinion that superior knowledge about a few stocks is a better risk management strategy than diversification (De Bondt, 1998).

Individual investors suffer from a variety of common misunderstandings about investing (De Bondt, 1998) caused by misleading financial practices and a lack of evenly distributed, accurate information. By way of example, a common financial maxim, "high risk, high return," may mislead unsuspecting and less financially astute investors to believe that the adage refers to every investment instead of the average expected returns to which it does refer. Second, there is more publicity about successful investments in the media-- rather than unsuccessful investments -- that may persist for a variety of reasons. Businesses in which angel investments are unsuccessful may be defunct or closed providing fewer reminders of poor performing investments. Angels whose investments have performed poorly may be reluctant to speak readily about such investments. Business angels suffering from a dearth of information about actual returns to investments may not appreciate the high levels of uncertainty associated with such investments. The combination of qualities that characterise individual investors leads some to feel that informal investors' non-economic motives render the agency theoretic assumptions of financial maximisation and information asymmetries impotent (Landstrom, 1992).

Habituals' Motivations

There is tentative evidence that habitual angels have a greater concern for market risks (than novice angels) indicating that habitual angels are like formal venture capitalists (Van

Osnabrugge, 1998a; Wetzel, 1987). Fiet's (1991b) seminal work regarding market and agency risk indicates that formal venture capitalists demonstrate more concern for market risk than for agency risk (because they have effective contractual mechanisms to address agency risk such as replacing entrepreneurs if necessary). As a consequence, habituals' motivations may gravitate more towards those of formal venture capitalists. Thus novice angels may be motivated by individual investor-type motives whereas habitual angels are motivated more similar to formal venture capitalists.

There has been speculation about the varying motivations of angels who go on to invest numerous times compared to those who invest only once (Kelly & Hay, 1996a; Kelly & Hay, 1996b). Angels who mitigate informational hazards by possessing better information such as professional investing skills, or specialised industry/market/technology knowledge may do so because of experience, or they may be better prepared *ex ante*. Those who have investment or financial skills make extraordinary efforts to have more, or better, information available to them. This may be because of a wider circle of previous investments and contacts, providing a motive to be more circumspect in their investments. Angels who are well versed in an industry, market or technology may have special insights about the potential for such investments. Their specialised information mitigates some asymmetries because angels do not have to rely solely on the information provided by entrepreneurs. For these angels, motives may polarise about financial incentives not necessarily from experience, but because of better information.

On a continuum of professional knowledge and acumen about informal investing, novices may be at one end and habitual angels at the other. The same continuum would place habitual angels between novice angels and formal venture capitalists. Where motives are concerned, formal venture capitalists are bound to produce financial results, and if habituals are between novices and formal venture capitalists, they may be more inclined towards financial results as well.

Hypothesis 1: Angels who go on to become habitual angels have stronger financial motives at the level of their first investment than do novice angels.

Discussions of motivations in financial research are usually predicated by assumptions of economic ‘rationality’ defined as financial maximisation (Thaler, 1993). The professional procedures of formal venture capitalists are attempts to ensure adherence to the concept of financial maximisation (Chapter 2). Habitual angels make more investments than novices so they sample from a variety of experiences and acquire additional specific information than when they were novice angels. Their repeated investment behaviours suggests they acquire increasingly important information through a variety of experiences about the nature and process of informal investing. Over time, increased specific information to which habitual angels become exposed (such as conducting better due diligence, refining their deal generation activities, being better prepared for entrepreneurial malfeasance) may cultivate a more neoclassical economic approach to investment motivations. In another strand of the literature, habitual angels are perceived as being less naïve regarding the appraisal process than novice angels which is attributed to learning effects (Van Osnabrugge, 1998a).

Since entrepreneurs are known to change their motivations with subsequent investment (Donckles, Dupont & Michel, 1987) increased specific information about informal investing and decreased naivety may result in more obvious financial motivations.

It might also be suggested, however, that increasing numbers of investments mean increasing amounts of personal wealth and a subsequent increase in non-economic motivations. If wealth maximisation is no longer a pressing issue, other motivations may arise. Nonetheless, the following proposition is advanced.

Hypothesis 2: Habitual angels' financial motives increase as investment frequency increases.

4.2.2 Deal Generation

Formal and informal venture capitalists generate deal flow as a means of reducing informational asymmetries because adequate deal generation promotes the perusal of a pool of opportunities sufficient to supply enough variability to find an investment for which they have a smaller informational disadvantage. If perfect markets existed about pre-IPO firms, abundant information would be available about buyers, sellers and deals and informational disadvantages would not be as large. However, at the pre-IPO stage, information about the existence of deals and location of buyers is difficult to obtain, and are sometimes hidden. To add further to this problem are the industry-level effects of uncertainty. At the industry level, the presence of uncertainty as a result of informational asymmetries causes markets to shrink (Akerlof, 1970). In the informal venture capital industry, poor deal flow has the capacity to negatively affect the quantity of finance demanded of angels (by entrepreneurs) because the small number of proposals viewed by angels causes them to make offers to entrepreneurs that are more costly than able entrepreneurs are willing to accept. Able entrepreneurs withhold their proposals in the presence of poor offers exacerbating the (informal) venture capitalists' difficulties in locating good opportunities (Amit et al., 1990a).

Based on a small number of variables, Van Osnabrugge (1998a) indicated that habitual angels are more interested in market risk than novice angels and Fiet (1995b) showed that venture capitalists who are more concerned about market risk are more likely to use more formal sources of informants as referrers. Habitual angels' inclination to aspects similar to formal venture capital suggests that they will use a broader number of informants than novices. Though the environment with which angels attempt to locate opportunities is imperfect and their ability to generate adequate deal flow is compromised, angels who are predisposed to

financial maximisation would be expected to make concerted attempts to identify business proposals. Since it is proposed that habitual angels are predisposed to act more in a more financially maximising manner, the following hypothesis is proposed.

Hypothesis 3: Angels who go on to become habitual angels view more proposals than novice angels at the level of the first investment.

The passive manner with which deals are identified dominates discussions of deal generation at the informal level. Considerable attention is devoted to the passive methods that angels use to find potential deals -- informants, business colleagues, acquaintances, friends and other types of referrers. Very little research attention is devoted to entrepreneurs' cold calling efforts (since angels' desire invisibility) or the pro-active methods in which angels might engage (Harrison et al., 1997; Riding et al., 1993).

It seems reasonable that angels who are unhappy with the number, or quality of proposals that are referred to them (Harrison et al., 1997; Riding et al., 1993) may conduct an active search. Pro-active activities may include: reviewing business opportunity columns in newspapers and magazines, reviewing market research documents and direct mail list suppliers, and contacting business brokers, accountants and BISs (Mason & Harrison, 1995a). A variety of other pro-active search activities might include general or specific networking with the business community, industry contacts, or work-related personnel, or actively pursuing contacts with government agencies and personnel. Angels may also engage in activities such as advertising for investments, making their interests known to businesses, and contacting suppliers and clients in their current trade sector. These are all interactions whereby individuals may become acquainted with potential business investment opportunities.

Van Osnabrugge's (1998a) habitual angels were significantly more likely to co-invest and select investments in industry sectors in which they had experience. Both of these qualities

imply an understanding of risk and possible increased financial acumen. In addition, a weakly significant negative indication to investing locally indicates habitual angels are prepared to diversify geographically (if not industry-wise). Angels who go on to become habitual angels may be characterised by a higher level of financial knowledge, thus their pro-active deal search activities will be expected to differ from those of novices from the outset. Though the level of pro-activity is admittedly low (Mason & Harrison, 1993a), the pro-active activities of habitual angels who are predisposed to differ from novices will be obvious at the level of the first investment. In a convenience sample, habitual angels (10 investments or more) were more likely to report higher rankings for pro-active deal generation than for less active investors (Kelly & Hay, 2000) though no tests of significance were applied to this data. The authors allude to the learning ability of angels over subsequent investments, however, learning effects are difficult to measure without longitudinal data. If these angels were predisposed to habitual behaviour, pro-active search efforts may have been obvious at the level of their first investment as well.

If novice angels are less financially knowledgeable than would-be habituals, they may stumble across an investment opportunity with little or no pro-active search. Additionally, perhaps they are 'put upon' to invest in a business opportunity operated by a family member would be expected to have conducted minimal pro-active deal generation since the investee was previously known to the angel. Based on the foregoing, it is anticipated that habitual angels are more financially astute than novice angels and are more likely to engage in pro-active deal generation.

Hypothesis 4: Angels who go on to become habitual angels conduct more pro-active deal generation activities at the level of the first investment than do novices.

The nature of habitual angels' passive deal generation activities may differ from novices as well. This argument proposes that habitual angels are recognised as private equity suppliers

amongst their professional, industrial, family and business communities, and that informal information regarding their investment activities and pro-activity is known through formal and informal communications channels. As angels' pro-active search becomes known in their business communities, passive methods of deal generation becomes more frequent. Both referrals and informants, and entrepreneurs may be expected to take advantage of the knowledge that an individual is looking for private equity investments. Kelly and Hay's (2000) deal makers were observed to have more referral activity, but their results were not conclusive.

At the same time that angels' interests in private equity investing are being informally communicated, angels work to decrease their visibility so as not to be deluged with unsolicited proposals. This means business angels take efforts to reduce their visibility in order to lessen unwanted solicitations. The unwanted solicitations often come from entrepreneurs' direct efforts and formal venture capitalists' rarely invest in deals sourced in this manner (Van Osnabrugge & Robinson, 2000). In this case, habitual angels' attempts to withdraw from unsolicited opportunities causes them to be available only to those who know them, or their business or financial interests, well. Because these more reticent angels are more concerned for their personal privacy, the most likely candidates for potential opportunities will be family, close personal friends and acquaintances, or possibly close industry colleagues – types of referrers or informants. Thus, their desire to flee from unwanted entrepreneurial solicitations forces them to become more reliant on more passive methods of deal generation – those opportunities suggested by others. Based on the complementary foregoing arguments, the following hypothesis is proposed.

Hypothesis 5: Angels who go on to become habitual angels engage in more informant-driven (passive) deal generation activities than do novices at the level of their first investment.

The deal generation efforts of formal venture capitalists are relatively homogenous. Three types of deal flow are typical (Tyebjee & Bruno, 1984) and of those, the unsolicited advances of entrepreneurs rarely produce investment-quality opportunities (Van Osnabrugge & Robinson, 2000). The remaining informant and pro-active approaches constitute most of their activity. More recently, as industry competitive pressures strengthen, pro-active approaches assume a larger role despite the associated increase in costs (Wright & Robbie, 1999).

Successful re-investing venture capitalists often make use of former and current investees as sources of deal generation (Wright et al., 1999). The engagement of more pro-active search efforts to order to identify opportunities, and the use of former entrepreneurs as sources of information, indicates a broadening variety of deal generation activities for successful venture capitalists.

Fiet (2002) proposes that entrepreneurs identify opportunities by an exploitable combination of previous idiosyncratic knowledge and systematic search for information, and that as they “gain experience, they become more knowledgeable about venture ideas and their sources (p. 116). The specific information is a combination of “people, places, timing, special circumstances, relationships and technology” (p. 141). A wide variety of information sources is implied by this research. In a large sample of entrepreneurs in the UK, habitual entrepreneurs used a greater number of sources of information and were more disposed to a developmental approach to opportunity recognition (than simply being alert) than novice entrepreneurs (Ucbasaran et al., 2003).

The angel literature has highlighted the importance of contacts and referrals as sources of deal generation for business angels. In Section 2.5.1, introductions provided by BISs in some locales were highlighted as helping to improve inefficiencies. BANs are also recognised as a useful source of deals as the personal networks of other angels facilitate entry of entrepreneurial opportunities into the network, and the introductions provided by angels endorse entrepreneurs (Farrell, 2004). Overall, information sources and deal generation

activities appear to be more varied for habitual agents rather than novices. Based on the foregoing, habitual angels are proposed to conduct a greater variety of deal generation activities than novice angels.

Hypothesis 6: Angels who go on to become habitual angels conduct a greater variety of deal generation activities than novice angels at the level of their first investment.

4.2.3 Cognition

The appraisal process not only reflects upon the type of information sought, but how that information is interpreted. Perceptions of entrepreneurs (and their deals) vary amongst angels causing adverse selection issues to emerge (Amit et al., 1993a) because variations may occur amongst the types of information sought and how, even identical, information is interpreted. If information uncovered during the appraisal stage is processed differently by various investors, studying cognition is essential. The growing literature relating to habitual entrepreneurship and cognition was outlined in Section 3.4.3.

At the organisational level, such as for formal venture capital firms, objectives and policies guide decision-making to reduce informational asymmetries. Objectives and policies guide the organisations' approach regarding what information to pursue and how to interpret the information (decision-making criteria for each fund). Information asymmetries are addressed by sector and location policies that advance proposals that represent higher potential projects, profitable sectors, specific industries, or locales that permit close monitoring (Wright & Robbie, 1996). These fund-wide policies guide initial screening which reduces the large number of proposals generated thorough deal generation.

Whereas the formal venture capital industry is characterised by policies and objectives, the informal venture capital industry is characterised by idiosyncratic desires, personal discretion

and individual decision-making. Economic interpretations now acknowledge that personal investors' actions are not fully financially maximising, nor constructed upon deliberate choices based on probability distributions and assessed outcomes (Schwartz, 1998). Studies have begun to erode the assumptions of neoclassical economics by uncovering a variety of human decision-making anomalies¹⁴ (Lewin, 1996). It is possible, however, that the susceptibility to cognitive errors may account for success (Baron, 2004a) and possible repeat angel activity.

Heuristics

Two decision-making heuristics are representativeness and overconfidence.

Representativeness is the tendency for individuals to generalise from a small number of non-random observations (Busenitz & Barney, 1997) often from their own experience and knowledge, and to be insensitive to small sample sizes (Kahneman and Tversky, 1972). More particularly, representativeness describes subjects' assessments of probabilities of events by the degree to which the events are similar to other events, not to the degree of their base-rate occurrence in the population at large (Kahneman and Tversky, 1973). The fundamental notion of statistics and the law of large numbers "is evidently not part of people's repertoire of intuitions," (Tversky and Kahneman, 1974, p 6) as decision-makers are known to disregard the base rate of an occurrence (the level of a quality that exists naturally in the population) in favour of gut reaction, intuition and anecdotal experiences. Generally, people differ in how they "process and interpret statistical generalities and these variations may have significant but systematic impacts (p. 125)" on the decisions they make and the success of those decisions (Venkataraman, 1997). Prior probabilities are employed more accurately when no other information is supplied (Kahneman and Tversky, 1973). Interestingly, as information is provided about an event, it increases the propensity for subjects to employ the

¹⁴ Shira B. Lewin (1996) provides a broad and comprehensive historical overview of the debate between economists and psychologists regarding the discussion of rationality.

representativeness heuristics with less consideration for prior probabilities and population base rate information.

Representativeness: The effort involved in the availability of, and search for, specific information relating to investments can be expected to impact on the use of representativeness. As non-professionals, business angels have less time and search skills than formal venture capitalists. If business angels have other investments in addition to occupational and personal responsibilities, their ability to process large amounts of due diligence and supplementary information may be limited. To reduce the number of industry or company reports or observations available, business angels may rely on rules of thumb. Furthermore, business angels have a smaller sample size upon which to base their decisions as the nature of their activities inclines them to far fewer investments than professional specialists in formal venture capital firms.

Angels limited use of broad sources of information may be similar to that used by entrepreneurs. Entrepreneurs are known to use representativeness (Busenitz & Barney, 1997a) since they spend their time and effort researching one particular business opportunity and selecting from a limited number of options that suit their objectives. Entrepreneurs use a small number of limited alternatives to quickly take advantage of prospects that may have a narrow window of opportunity. Entrepreneurs' (and angels') situations are laden with uncertainty and small sample sizes, circumstances ripe for the use of representativeness.

Angels with less angel experience may employ this heuristic more because they are provided lots of information supplied by the entrepreneur, yet have a lack of knowledge about base rate information about informal investing. Novices may tend to rely more heavily on the information provided by the entrepreneur and less on their own knowledge of the industry, individual, or product. Having fewer investment experiences, they have a smaller sample size

upon which to rely. This may be the equivalent of less base rate information. Since it is recognised that increasing information (a detailed business plan provided by the entrepreneur) disposes individuals to not apply base rate information, and where the knowledge of base rate information may be absent, the following is proposed.

Hypothesis 7: Novice angels will manifest representativeness more than habitual angels.

Overconfidence: Over-confidence represents overly optimistic confidence when making assessments of situations and a reluctance to incorporate dis-confirming information (Fischhoff et al. 1977). It has been suggested that over-confidence may be the quality that makes entrepreneurs “take the plunge” (Baron, 2004a p. 235) and to overcome great odds in order to initiate ventures (Busenitz & Barney, 1997a). Over-confidence occurs when the confidence level of the assessor exceeds the assessor’s accuracy.

Almost all formal venture capitalists exhibit some level of overconfidence which may, in part, be due to the large amounts of information they assess in the due diligence process (Zacharakis & Shepherd, 2001). Oskamp (1982) notes that as the information gathering process progresses, predictive accuracy reaches a ceiling. As more information is added, assessors’ confidence in their decisions continues to rise even though the predictive accuracy does not. Increasing amounts of information introduced to the assessment are known to amplify over-confidence. The result of the information gathering process is an assessor whose confidence level exceeds their predictive abilities. Angels are not professionals in their investment fields (Lerner, 1998), their informant networks are non-expert and less expensive, their technical sources are less in-depth (Fiet, 1995a), and yet they are confronted with often large volumes of information provided in the form of a business plan by an eager entrepreneur.

However, experienced assessors have been observed to recognise and appreciate the “increasing information” anomaly and can be less overconfident than inexperienced assessors (Oskamp, 1982). Habitual angels (as compared to novices) are more experienced assessors and are more likely to be aware of the risks and difficulties of informal investing, and may be less confident than their less experienced colleagues. As more experienced assessors, they will have been chastened. Based on the foregoing, the following hypothesis is proposed.

Hypothesis 8: Novice angels manifest more overconfidence than habitual angels.

4.3 Effect of Appraisal Qualities on Investment Performance

In the previous section, variables related to the appraisal process (motivations, deal generation and cognition) were hypothesised to have varying relationships with the novice or habitual activity of business angels. If the success of the individuals working in the venture capital marketplace is important to the industry (Amit et al., 1998), identifying the appraisal qualities that are indicators of informal venture capital investor performance is a useful exercise. In this section, appraisal variables are investigated with respect to their impact on performance where performance is defined as the ability to exit profitably.

When business angels have considerable amounts of information about an industry, a technology, an entrepreneur, the informal investing process, or private equity, they are more financially erudite. They become, in effect, more like professionals. In so doing, they emulate more closely the motivations of their formal venture capital colleagues whose motives are driven by rates-of-return expectations and fiduciary responsibilities. A financial motivation suggests they will attempt to select high ability entrepreneurs and projects in order to satisfy their financial motivation. The performance of investments made by business

angels who have the information to be driven financially, are expected to fare better from a financial perspective than those who demonstrate less concern for financial motivations.

Hypothesis 9: Business angels who place a higher level of importance on financial motivations achieve improved levels of financial performance over those who place a lower level of importance on financial motivations.

Business angels who have high ratings for non-financial motives may be unaware of the uncertainty associated with informal investing. Asymmetry of information means they may have less information about informal investing, or the nature of the entrepreneurs with whom they are dealing, these angels may be the unsuspecting subjects of unscrupulous entrepreneurs who are more aware of their own entrepreneurial talents and abilities than are their financiers. Their lack of specialist investor information in this regard would be expected to be manifest in their rate-of returns on average.

Hypothesis 10: Business angels who place a higher level of importance on non-financial motivations achieve decreased levels of performance compared to those who place a lower level of importance on non-financial motivations.

Actively seeking investments as a method of deal generation is an information search process that implies that a variety of opportunities have been identified and the best one selected. Aggressively pursuing deal generation diminishes the information asymmetry between those who demand finance and their financiers provided angels know where to find the pre-eminent proposals and actively pursue them. Despite the willingness to engage in an active search, knowing where to find the best proposals is a daunting task. Alternatively, investors who are recognised in the business community as active investors may receive high quality, unsolicited proposals from credible sources (Kelly & Hay, 2000) that they may not have been able to reveal during an active search. Because some may come from sources unknown to the

angels' prior circle of references, unexploited and unforeseen opportunities may be present. Although the sources of some unsolicited proposals may not be known to the angel -- reducing the information value -- being receptive to unsolicited deals could improve the range and quality of deals generated.

Hypothesis 11: Business angels who are receptive to unsolicited proposals achieve better performance than business angels who are not receptive to unsolicited proposals.

The heuristic of generalising from small samples or from limited personal experience, representativeness, is a quality that reduces the range of information sought and considered during significant decision-making processes. Those who use such limiting qualities to ascertain the value of business investments are limiting the breadth of perspective on a problem and would, therefore, be expected to perform less optimally on average than those who use statistical reasoning upon which to base decisions.

Hypothesis 12: Business angels who make use of representativeness perform more poorly than business angels who make use of statistical reasoning.

Overconfident behaviour suggests an arrogance whereby the interpretation belies the facts. Overconfidence is often precipitated by increasing amounts of information which serve to reassure the assessor that the assessment they are forming is accurate. Greater amounts of information cause greater assessments of confidence even though the level of accuracy of the assessor does not improve with greater amounts of information. Business angels who interpret information with more confidence than their accuracy warrants may act on business plans and proposals and entrepreneurial meetings with greater abandon than is justified by the information. To the extent that overconfidence may be an expression of recklessness or lack

of cautiousness, it may be expected that overconfidence will lead to careless investment behaviours.

Hypothesis 13: Business angels who exhibit overconfidence financially perform more poorly than business angels who exhibit under-confidence.

4.4 Exit Performance and Re-investment

The last component of the information model of habitual behaviour is the link between successful performance and an angel's inclination to re-invest. Effective exits are often in response to a knowledge of market conditions which precipitate appropriate timing, and knowledge of market conditions requires contacts and information that is more accessible to the formal venture capitalist network than to the more inefficient informal venture capital network (Fiet, 1995a). This relationship between success and re-investment is well embedded in the formal venture capital industry. Venture capitalists who perform well on previous funds, go on to raise new funds, and re-invest again. Formal venture capitalists will even engage in active window dressing in order to prop up a fund's return as it approaches its closing in order to enliven their reputation capital. Formal industry associations and informal collegial networking provide the channels whereupon information about reputations flow.

In an information-based model for business angels, those whose previous outcomes were successful would have more information and income with which to re-invest. More specifically, highly successful previous investment outcomes may reinforce angels' re-investment in situations where tax regimes severely negatively affect capital gains. In these instances, re-investment may be highly desirable in order to defer taxes by re-investing capital gains.

However, there are a number of unique dynamics that differentiate angels' success/re-investment decisions from those of formal venture capitalists. Firstly, portfolio angels – by definition -- re-invest before an outcome is experienced. Thus, to the extent that portfolio angels are present, outcomes do not influence angels' re-investments.

Secondly, there is no evidence that the reputation effects of successful previous investments are a prerequisite for future angel investments. Whereas formal venture capitalists require successful previous performance to raise new funds, angels' independent activities enable them to re-invest at their own behest. Although social ties were identified as an important decision-making mechanism in seed and early stage investments of venture capitalists and business angels (Shane & Cable, 2002), the social ties investigated were amongst the funds' receivers (the entrepreneurs), not the funds' suppliers (institutional investors as limited partners).

Thirdly, because business angels' investments are typically much smaller than those of venture capital firms, non-syndicating angels who have substantial wealth can invest without consultation or consideration of any other person. Therefore, with a pre-disposition to invest prior to exit, a surfeit of reputation requirements, sufficient net worth, business angels do not need to rely on the outcomes from previous investments in order to re-invest.

Hypothesis 14: Business angels' exit performance on their first investment does not influence their re-investment behaviour.

4.5 Conclusion

The discussion outlined in the previous sections highlights the substantive issues addressed by informational asymmetry as it relates to the appraisal process, the appraisal qualities' impacts on re-investment, the appraisal qualities impacts on investment performance, as well as the

impact of investment performance on subsequent investment behaviour. The discussion points to the importance of the appraisal process as a means to address performance, and whether performance issues are related to habitual behaviour in the business angel population. The 14 hypotheses are summarised in Table 4-1.

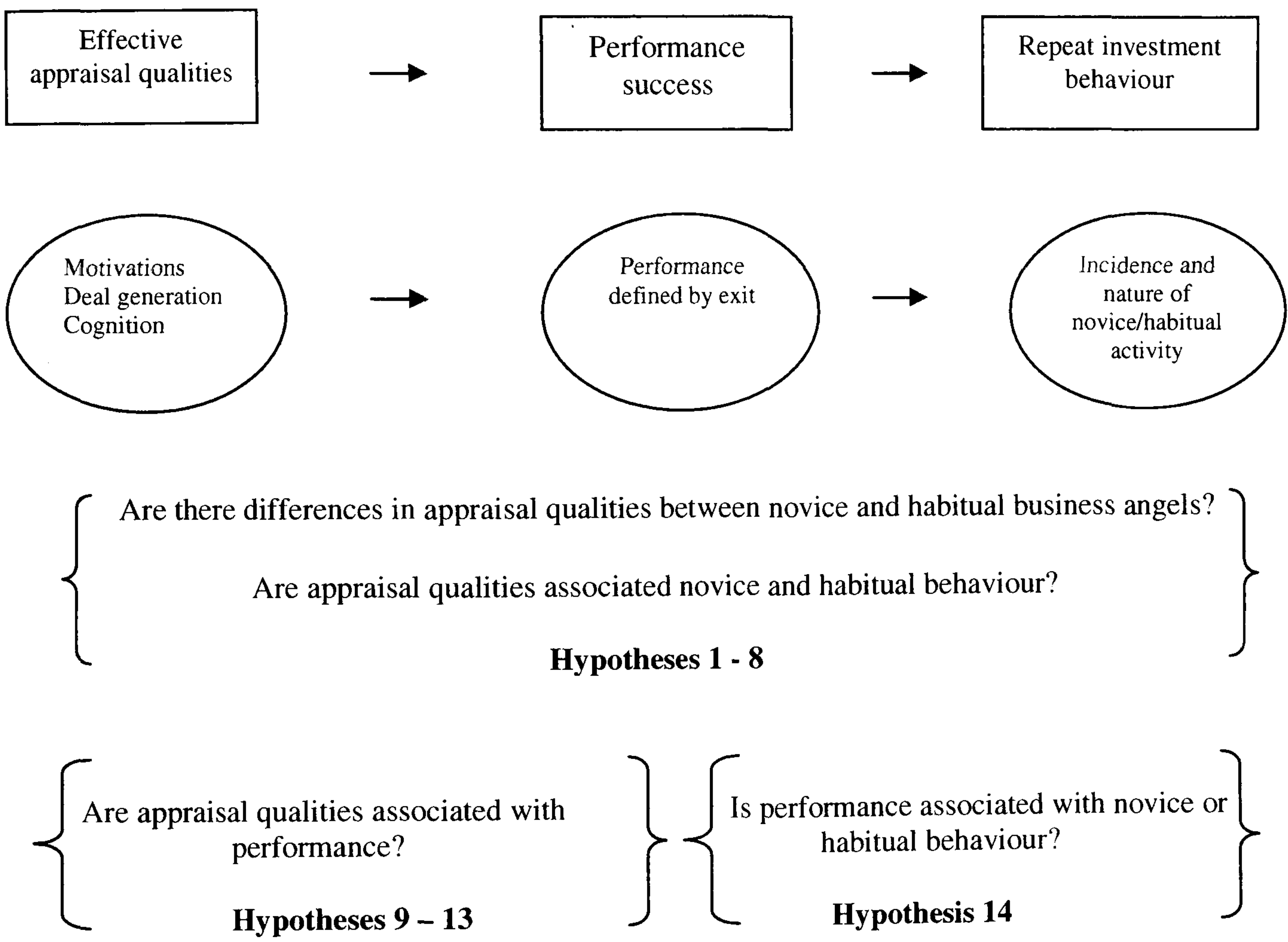
Table 4-1 - List of Hypotheses

Affect of Appraisal Qualities on Novice or Habitual Behaviour – Section 4.2	
1	Angels who go on to become habitual angels have stronger financial motives than do novice angels at the level of their first investment.
2	Habitual angels’ financial motives increase with investment frequency increases.
3	Angels who go on to become habitual angels view more proposals than novices at the level of the first investment.
4	Angels who go on to become habitual angels conduct more pro-active deal generation activities at the level of the first investment than do novices.
5	Angels who go on to become habitual angels engage in more informant-driven (passive) deal generation behaviours than novices at the level of their first investment.
6	Angels who go on to become habitual angels conduct a greater variety of deal generation activities than novices at the level of their first investment.
7	Novice angels manifest representativeness more than habitual angels.
8	Novice angels manifest more overconfidence than habitual angels.
Affect of Appraisal Qualities on Investment Financial Performance - Section 4.3	
9	Business angels who place a higher level of importance on financial motivations achieve improved levels of financial performance over those who place a lower level of importance on financial motivations.
10	Business angels who place a higher level of importance on non-financial motivations will demonstrate decreased financial performance compared to those who place a lower level of importance on non- financial motivations.
11	Business angels who are receptive to unsolicited proposals achieve better performance than business angels who not receptive to unsolicited deals.
12	Business angels who make use of representativeness financially perform more poorly than business angels who make use of statistical reasoning.
13	Business angels who exhibit overconfidence financially perform more poorly than business angels who exhibit under-confidence.
Affect of Financial Performance on Re-investment (Habitual Behaviour) - Section 4.4	
14	Business angels’ performance on their first investment does not influence their re-investment behaviour.

The model outlined in Figure 7.2 shows the three primary components of the existence of the venture capital industry as outlined by Amit et al. (1998) and as outlined in Chapter 3. The complementary qualities that represent the informal venture capital industry are the oval boxes below the rectangles. Below each of the ovals are the major questions that the

hypotheses address. The next chapter addresses the manner in which these hypotheses will be tested.

Figure 4.1 Informal Venture Capital Industry Model Highlighting Hypotheses Developments



5 Research Methodology and Preliminary Data Analysis

5.1 Introduction

In Chapter 4, a number of testable hypotheses were developed regarding the nature of the appraisal process (motivations, deal generation and cognition) and performance. They were framed by a perspective that suggested that effective appraisal qualities are related to financial performance which is related to habitual activity.

The objective of this chapter is to present a research design and methodology. This begins by exploring the state of entrepreneurship research and some of the common issues it shares with business angel research. A number of methodologies are discussed and one is proposed. The proposed methodology mitigates some of the issues of population definition, sample selection, age and success biases, random sampling and associated problems with generalisation. This methodology varies from other recent theses and represents a more rigorous approach to identifying elusive business angels. The formerly “unknowable” population (Wetzel, 1983a) is remedied as the number of new corporations is known. The three stages of the research design are then outlined including response biases and representativeness measures. The three stages of the research design are a quantitative assessment of angels from the incorporation records, a quantitative assessment of angels’ appraisal and performance activities, and a qualitative component consisting of angel interviews to provide context for the quantitative data. The research design is followed by a discussion of the measures. Descriptive results form the last part of this chapter.

5.2 Current State of Entrepreneurship Methodologies

Methodologies for entrepreneurship research have been discussed widely since the late 1980s.

As a young field of research (Romano, 1996), attention focuses on theoretical development, empirical observations, as well as methodological considerations regarding samples, questionnaires, methods, statistical analyses, and length of investigation.

There is a concern about the predominance of descriptive works with little theoretical grounding, as well as the relative paucity of good qualitative studies emanating from certain geographic areas (Gartner & Birley, 2002). Qualitative approaches, it is argued, shed light on the “general” by studying the “particular” -- specifically when the “particular” under investigation is hard to ascertain given the limited questioning available to quantitative methodologies -- and that this is critically important for a discipline that interfaces with numerous other disciplines (Hill & McGowan, 1999). Furthermore, using qualitative approaches is not inconsistent with developing theory as case-based, re-iterative, inductive logic approaches have been used to induce theory (Eisenhardt, 1989 outlines a number of notable examples.) In a comprehensive and critical review of 15 years of entrepreneurs and social network research, Hoang and Antoncic (2003) make a plea for more qualitative and inductive research as qualitative inductive and longitudinal works precipitate new theories to explore and test. Open-ended questionnaires and in-depth interviews attempt to capture information without predetermined points of view (Kolvereid, 1996) and widen the range of options for new avenues of thinking and exploration.

From a quantitative perspective, Cooper and Dunkleberg (1987) called on entrepreneurship researchers to conduct more broad-based work following the emergence of a number of fundamental differences between the findings of small, specific and highly focused studies compared to large, broad-based studies. Cooper and Dunkleberg (1987) assert that broad based studies are particularly important where scholars attempt to extrapolate findings to identify general principles for theory development such as entrepreneurship (and angel research). Conducting quantitative research with inferential statistics requires representative

samples and sampling procedures that include properly defined samples, random samples (each member of the population has an equal chance of being selected), and where variances are known and biases are reduced. Aldrich, Kalleberg, Marsden and Cassell (1989) lament the lack representative samples in entrepreneurship research. The purpose of encouraging broadly based, representative samples is to allow for generalization to the population and to allow the information to be useful for decision-making and policy development. Total error is reduced when care is taken to develop random samples of well-defined populations.

Descriptive studies are so-called because they describe parameters of the members involved in the study, not the population. Descriptives cannot be used to make inferences about the population, and it is the scholars' purpose to make inferences about populations -- not just describe samples -- in order to contribute to knowledge (Zikmund, 1986). Under current conditions, there are limited opportunities for extrapolating findings, and theory is not only not advanced (Kalleberg, Marsden, Aldrich, & Cassell, 1990), it may actually be hampered by "muddying" the waters (Murphy, 2002).

Much of the current angel literature is shaped by research subjects who are more visible, and who are more easily identified by researchers. The following sections review the entrepreneurship literature and angel literature to review where definitions are not appropriately broad and samples are frequently based on narrow sub-sectors that are easily interviewed and observed. Current selection procedures may favour angels who operate in urban locations, are members of elite financial groups, or who are members of other types of financial networks or association.

5.2.1 Definitional Concerns

Entrepreneurs and Definitional Concerns

Lack of a common definition of entrepreneurship has impeded growth of the field of entrepreneurship in general. Amit, Glosten and Muller (1993b) and Westhead and Wright

(1998) argue that defining entrepreneurship is central to its development. The failure to agree upon a definition has caused research problems since many studies are based upon differing definitions (Bygrave, 1989; Gartner, 1988; Gartner, Carland, Hoy, & Carland, 1988). Where no universally accepted definition of an entrepreneur exists, it is important for each researcher to define their interpretation of entrepreneur and how it is applied in the researchers' samples (Sexton, 1987). Sometimes, the heterogeneity within samples is more significant than the heterogeneity between the sample and the general population (Gartner, 1988). While a variety of different 'subsections' of entrepreneurs provide different groups against which to test and compare results of empirical work, too many subsections makes the combinations of groups against which to test various hypotheses unmanageably large. Consider the permutations possible of the following categories of 'entrepreneur': small business owners, franchise owners, start-ups, family business owners, family business successors, family business inheritors, enterprising inventors, retailers, and intrapreneurs. The existence of so many possible definitions makes it problematic to generalise between studies or conduct meta-analyses.

Business Angels and Definitional Concerns

Greater attention to definitions and sample description is vital for entrepreneurship research to enable replication, reliability, and greater growth of knowledge in the field. Describing populations narrowly allows the use of convenience samples which do not limit variances and do limit theory-building generalization, both of which are important for growth in the discipline. These issues are well known to angel researcher as knowledge about informal investors can be shaped by the definitions of angels that determine selection procedures.

The definition of an angel has varied across numerous studies – sometimes to suit the needs of the sample available. A broad array of the early studies of business angels are highlighted in Table 5-1. Seymour and Wetzel's (1981) original definition excluded any corporate

ownership, any debt instruments, and family and friends. They also provided that the angels were high net worth individuals who were financially astute. It is unknown whether or not they actually assessed the family and friends' connections, or how they determined financial acumen. Tymes and Krassner (1983b) used the same definition with the family and friend caveat. Harr et al. (1988) and Gaston (1989) relaxed the friends and family constraint. Later studies relaxed the debt restriction as well so contributions of debt would be counted (Aram, 1989; Sullivan & Miller, 1990). Riding et al.'s (1993) definition described it simply as investments in businesses not run by the investor. The trend towards fewer restraints, rather than more, continued when some companies were permitted into samples (Coveney et al., 1996; Stevenson & Coveney, 1994) and non-investing *virgins* were included for comparison (Coveney et al., 1996). A new angle was introduced in 1995 when Fiet defined angels in his sample only if they had made an investment in the past three years, as did Van Osnabrugge (1999). However, as the field approached its second decade of study an attitude of tolerance for broad definitions seemed to grow. Kelly (2000a), the Global Entrepreneurship Monitor study (Bygrave, Hay, Ng, & Reynolds, 2002), and Mason and Harrison's (2002) study on exits and returns included private individuals who had made at least one investment in an unquoted company.

In reviewing Table 5-1, differences in definitions speak to: 1) whether the investee was a stranger, family member or friend, 2) whether investments have been made in recent years, 3) whether to include some debt sources, and 4) whether or not to include companies or virgin angels. The first definitional issue explores the relationship between angels and investees, particularly as it relates to family and friends. Unquoted private equity investors of an individual nature are excluded from some studies because they may have been friendly with, acquainted with, or related to the investee (Seymour & Wetzel, 1981). Alternatively, some definitions specifically permit the inclusion of family and friends (Harr et al., 1988; Lumme et al., 1996). Although BANs and BISs would be inclined to foster investments between strangers, BANs and BISs are considered to be only the tip of the iceberg of the volume of

private equity investments (Mason & Harrison, 2001b). Thus, this criterion may exclude large numbers of unquoted private equity investments that are made outside of the organised networks.

The second criterion limits angels based on an arbitrary time limit since their last investment (Fiet, 1995a; Van Osnabrugge, 1998b; van Osnabrugge, 1999). Angels who have not made an investment within a certain time period, or who are not currently angels, are eliminated from further examination. An angel may not have made an investment in the past three years, but may be still holding investments made previous to the arbitrarily determined time frame (2002), making this a short-sighted criterion. Thirdly, the inclusion of certain kinds of debt in definitions may be in response to individual reports of convertible debt being used to finance businesses. The fourth definitional issue, including virgin and corporate angels (Coveney et al., 1996; Stevenson & Coveney, 1994), may be one of convenience where a greater response rate can be achieved if responses from virgin angels and angel corporations are included and can be easily identified as a separate cohort.

Clearly, a variety of definitions apply with respect to who is included in a study of business angels. The arbitrary limitations on the amount of time since the last investment, the inclusion of family or virgin investors and the inclusion of debt are easily resolved based on the survey and scholar. The distinctions amongst investments in businesses owned by friends are somewhat more awkward due to the nature of the relationship before and after investing.

This thesis adopts a definition that is inclusive, and which can be easily divided into cohorts. Informal investors are defined as individuals who have made an investment in an unquoted firm that is largely run or operated by someone other than themselves. This definition provides for the inclusion of family angels, friends as angels, angels as part of a BIS or BAN, and arms' length angels. It provides for individuals who have taken advantage of equity tax credits and debt since convertible securities are preferred for some active angels. (The

security is issued as debt in the event the firm does not do well, but can be converted to equity in the event of a liquidity event.) This definition does not include: individuals who state a preference for informal investing, but have never done so, corporate investments in early-stage firms, investments in firms by individuals who would otherwise be classified as the lead entrepreneur, and investments made by individuals in quoted firms.

Table 5-1 - Definitions and Sample Selection Methods of Business Angel Studies

<i>Author, Date & Area</i>	<i>Sample Method</i>	<i>Angel Definition</i>	<i>Proportion of Family-only Angels</i>
Seymour & Wetzel, 1981 USA	Angel networks; Friends and acquaintances; Snowball	Investors who provide risk capital other than small business investment corporations, venture capital, other institutional investors, and public equity markets; Those with high net worth and financially knowledgeable; Excludes family, friends, and debt instruments	NR
Tymes & Krasner, 1983 California, USA	Snowball (venture capital referrers); Businesses (non-random) former venture capital recipients; High net worth individuals; Friends & acquaintances	Investors who provide risk capital other than SCICs, venture capital, other institutional investors, and public equity markets; Those with high net worth and financial knowledge	NR
Harr et al., 1988 East Coast, USA	MBAs; Medical & dental school alumni; Venture capital clubs; Venture capital network subscribers, Angels known to authors	An investment by a private individual in a young start-up company; Include family & friends	NR
Gaston, 1989 USA	Scientific probability sample of 240,000 US businesses	Private individuals who supply risk capital, without paid middlemen, to new or growing small businesses	10% of 435
Aram, 1989 Great Lakes, USA	Businesses	Includes debt as well as equity	
Sullivan & Miller, 1990 Tennessee, USA	Professionals (lawyers, accountants, doctors, dentists); Commercial bankers; Senior mgrs; Entrepreneurship association memberships	Debt or equity provided through non-institutional channels by private individuals to businesses producing a good or service founded by someone other than investor	NR
Harrison & Mason, 1992 UK	SME owner/managers; High income-earners; Investors in speculative stocks; Venture capital fund contacts; Business introduction service; Investment opportunities advertisers in Financial Times	No definition outlined; Several references made to being incompatible with Landstrom's	NR
Riding et al., 1993 Canada	Business introduction service; Board of Trade; Venture Capitalists	At least one (or multiple) investment (s) in a business not run by the individual	Not Assessed

Area, Author & Year	Sample Method	Angel Definition	Proportion of Family-only Angels
Strom, 1993 den	Businesses (non-random); Snowball	Private investors who provide risk capital directly to unquoted small firms	NR
enson & Coveney, 1994	Business introduction services	Private individual or company that has or is interested in investing in unquoted ventures (excluding large prospectus issues)	
, 1995	2 Angel networks; Economic dev. Assn & opera lists.; Personal presentation; Snowball	Individual investing own money and active in past three years	NR
eney, Moore & Nahapiet, 1996	Business introduction services; (Subscription holders & potential subscription holders to VCR)	45.5% of sample corporate & virgin angels	
ime, Mason & Harrison, 1996 and	Snowball	Include investments in friends' businesses	
Osnabrugge, 1998a, b	10 Business introduction services	Unquoted investment in past three years	NR
son & Harrison, 2002	19 Business introduction services; Snowball	Individual investors who have made at least one investment in unquoted companies;	NR
y, 2000	4 Business introduction services; Snowball	Private individuals who have completed at least one investment	NR
lobal Entrepreneurship Monitor, 2002 Countries	Random dial of population in 29 countries	All men and women who personally invested in a business start-up that was not their own, excluding stocks and mutual funds	47.9%
rrell, 2005 nada	Directors of random selection of newly incorporated firms	Investments in a unquoted company in which the investor is not the lead entrepreneur	Stage One - 34.5% Stage Two – 11.6% (of investors)

NR – Not reported in study

5.2.2 Sampling Concerns

Sampling concerns are an additional area of concern for business angel research (Harrison & Mason, 1992), much as they have been for scholars attempting to locate entrepreneurs. A discussion of business angel sampling concerns is informed by the entrepreneurship literature and both appear below in an effort to fully explore the issues involved.

Entrepreneurs and Sampling Concerns

Many sampling and representativeness issues arise from incomplete or biased lists or databases. Stale and incorrect information often occurs when dated database information is used to compile samples (Birley, Muzyka, Dove, & Rossell, 1995). For example, Birley et al. (1984) found significant numbers of new companies not listed within Dun & Bradstreet files. Furthermore, it was found that a substantial percentage of firms reported as having gone out of business by Dun & Bradstreet were not only still in business, but at the same address and phone number as reported in Dun & Bradstreet's records from five years earlier (Williams, 1993). Aldrich et al. (1989) found that Duns Market Indicator files do not represent as many as 90 percent of new businesses. US state employment insurance files only apply to companies that have a payroll so therefore do not include companies without employees. On-street/phone book enumeration methods provide the most new firms, but miss those that have no visible street location which are often new businesses. Busenitz and Murphy (1996) found that sales tax files are a good source of young companies still early in their start-up stage.

Finding *young* companies is essential (Aldrich et al., 1989) though biases can occur.

Established database services unintentionally cull less successful firms over time (Aldrich et al., 1989) thus introducing age and success biases since the firms in the database have stayed in business longer. This unintentional culling is more insidious because firms exhibit different strengths at different periods of their organisational lives. For example, though most

start-ups will be by flexible young firms (taking advantage of their first mover status), most research will focus on later-stage firms (specialising in efficiency which is necessary as competitive populations near their carrying capacity) that have become large and successful with time. Research meant to focus on the former unintentionally captures the latter (Kalleberg et al., 1990).

Sampling procedures are essential to quantitative empiricism because sampling variances cannot be estimated if samples are not appropriately selected (Deming, 1966). When the data have been collected using random sampling procedures, the central limit theorem and the law of large numbers permit sampling variances to be estimated thus ensuring representativeness. Sampling variances can be reduced by careful attention to randomly selected probability samples (Lewis-Beck, 1994) and increasing the size of the sample (Sudman, 1976). When sample variances are unspecified, the reader's assumption is that they lie equally distributed around the mean. There is, however, nothing to suggest that this is the case. The biases may all lie in one direction, or the other. Random sampling is the only selection method that permits the assumption that the variance is equally distributed about the mean (Hansen, Hurwitz, & Madow, 1953).

Practitioners and policy makers are cautioned from making too much of the empirical observations from studies using biased samples (Aldrich et al., 1989). Strong biases that appear as a result of sample source biases hamper theoretical and empirical advances in entrepreneurship (Murphy, 2002). However, if research designed to illuminate the biases is undertaken in earnest, apparently contradictory findings may be explained by understanding the biases inherent in the samples, particularly if researchers consistently disclose sample source(s), and any known characteristics of the source(s) (Murphy, 2002).

Business Angels and Sampling Concerns

It has been suggested that the population for business angels is “unknowable” (Wetzel, 1983a) partly because angels desire invisibility so they will not be deluged with business proposals (Harr et al., 1988) and partly because the industry is not organised. Thus, the population of informal investors has not been ascertained and random sampling is a problem when populations are unknown, and representativeness suffers.

Much of the angel research to date has been conducted using convenience samples that are easily interviewed and observed. These populations include angels belonging to BANs (Stevenson & Coveney, 1994), mailing lists of persons with high discretionary incomes, subscribers to venture magazines (Harr et al., 1988), and snowball samples derived from formal venture capitalists, financial agents and known angels (Riding et al., 1993). The samples used for a variety of notable angel studies were outlined in Table 5-1.

Increasing the size of convenience samples alone does not improve results or reduce biases as suggested by Stevenson and Coveney (1994). In their response to Stevenson and Coveney (1996), Mason and Harrison (1997a) point out several differences amongst findings that are a result of methodology and sampling issues. In addition, the contention that there are few differences between angels in general and angels drawn from the subscription lists of BANs (Van Osnabrugge, 1998a) is not supportable and is likely to be subject to considerable non-sampling (systematic) error. To inform readers and display unreported biases, Harrison and Mason (2002) advocate reporting the various biases present as a necessary recourse for scholars of convenience samples.

To reduce bias, Mason and Harrison (2002a) suggest using a variety of BANs (local, regional, public, private, large, small). A German study proposed using information derived from companies (Brettel, 2003), however, rather than sampling from a population of firms in general,

the companies were selected on the basis of their similarity to those invested in by formal venture capitalists. This method would only serve to introduce more biases, rather than using a representative sample of companies.

Studies by Aram (1989) and Ehrlich, De Noble, Moore and Weaver (1994), Gaston (1989) and Bygrave, Hay, Ng and Reynolds (2002) employed methodologies incorporating broad-based populations and random sampling. Gaston's work (1989) demonstrates considerable heterogeneity amongst the angels and Bygrave et al.'s (2002) GEM study showed an incidence of angel investing that is very widespread. The following section explores the various biases that may be present for populations used in convenience samples and other types of samples.

5.2.3 Merits and Drawbacks of Various Sampling Methods

Each of the sampling methods used are likely to produce biases in unknown quantities in untested directions. This section reviews the angels who are likely to be included and more specifically, those who may be excluded by self selection, geography or invitation. Each subsection also makes inferences about the possible direction of some of the likely biases resulting from various sample selection methods and finished with a observation about the associated costs. An overview of the discussion to follow is found in Table 5-2.

Business Introduction Services

BISs provide services to capital-seeking entrepreneurs and subscription-holding angels. These services may include matchmaking, business plan and presentation skills support for entrepreneurs, and forums and professional development for angels. Angel subscription-holders often pay a fee and may be experienced or virgin angels. New ventures are presented to angels in the form of written summaries (or bulletins) sometimes prepared by the service organizers, or personal introductions where entrepreneurs make a "pitch" to observers. Similar

services, called forums, prepare a program of entrepreneurial talent and invite angels. Some BISs are funded by governments, others are non-profits and some are profit-oriented. For researchers, the convenience of BISs as the population for samples is compelling. BISs have been the primary source of angels for many angel studies (Coveney et al., 1996; Kelly, 2000; Stevenson & Coveney, 1994) and part of the overall sample for other angel studies (Harrison & Mason, 1992).

BISs will only appeal to particular types of investors. Results of research with angels who have never been BIS members may produce different results from those who have been members (Paul et al., 2003). Studies conducted using BIS members may exclude those who want to conduct their own search, those who are geographically situated so as not to be able to take advantage of such a service, and those who find such services to be crutches propping up poor entrepreneurial proposals (Harrison et al., 1997). With willing and co-operative BISs, the relative savings by using a their membership as a population would be substantial as there is no expensive discovery process.

Business Angel Networks

Angel networks are groups of individuals who actively seek proposals from one another, but which do not take on the formal introduction roles or entrepreneurial services like those of BISs. Angel networks are jointly managed by the small number of participating angels in either a cooperative, or limited partnership-type fashion. Angel networks select members based on close personal friendship (Wetzel, 1983b), background experiences, ability to get along, and/or availability of time and location (Mason & Harrison, 1995a). Most of these angels are knowledgeable about financial matters and they pay an initiation fee for overhead and incidentals regardless of investment (Mason & Harrison, 1995a; Wetzel, 1983b). Angel networks may advertise to solicit deals, may include angels who have actively and publicly sought proposals on their own, and are likely to represent the wealthiest of angels. Case

studies of angel networks and sampling studies where angel networks have been featured include Massachusetts (Wetzel, 1983b) and Texas (Fiet, 1991a).

There is no claim to representativeness for angel networks or syndicating angels. So research using angels who are members of networks may produce different results from that of other samples (Paul et al., 2003). The obvious self-selection and personal bonds produce a group of individuals who are likely to be very similar to one another. A sample using angel networks would be over-representative of very wealthy angels, habitual angels, or those who adopt a syndication mentality because they are self selected and are known to syndicate. A sample using angel networks would be under-representative of angels who prefer to invest alone, or who are not inclined towards investment clubs, or who are not well-known to others. A survey design using angel networks is cost effective and practical since finding one angel produces the others members of the group once the network is identified. Thus, a small number of individuals may be contacted with little effort.

Survey of General Population of Adults

Angels are an 'invisible' population, comprised of a range of qualities yet to be fully understood because our angel knowledge is still developing and most of what is known is based on convenience samples. One method to produce a representative sample is to randomly sample from the adult population in a large geographic area. The Global Entrepreneurship Monitor (Bygrave et al., 2002) is a 38-country, population-wide survey of entrepreneurship. Unfortunately, only a small number of survey questions inquire about informal investment.

There are considerable issues concerning surveying households, the techniques needed to ensure every person has an equal chance of being selected particularly for a universe where the population is known to be very low. Deming (1950) suggests that a population which is

thought to be less than two or three percent of the sample frame (which may be the case for business angels sampled from the general population) poses additional concerns. If the problems associated with general population studies can be negotiated, this method has the most merit to produce a broad range of angels. Statistically, for studies where populations exceed 500,000, a representative sample size of 2,009 persons will give a reliability $\pm 2\%$ and a 95% confidence level for parameters assumed to exist in less than 30 percent of the population (Zikmund, 1986).

The magnitude and expense of such an undertaking makes it a rare occurrence as costs are always a key issue. Estimates of the cost of being part of the GEM study are approximately \$75,000 per annum though the combined efforts of more than 100 scholars throughout the world contribute to amortizing the costs for any one country. To conduct a similar method for angel investment, in one country, would cost substantially more¹⁵.

Membership Lists from Governments, Research Firms and Entrepreneurship Development Agencies

Some studies use lists of small and medium-sized enterprises (SMEs) (Aram, 1987; Gaston, 1989; Sullivan & Miller, 1990) to identify angels. These include membership or mailing lists from boards of trade, chambers of commerce, regional economic development associations, or those for sale from professional research firms. Some studies use lists in a non-random fashion (Landstrom, 1993; Tymes & Krasner, 1983; Wetzel, 1981) and other studies sample from specific industries or sectors such as new technology-based firms (Freear et al., 1990). Both groups attempt to identify angels via the firms in which they have invested.

¹⁵ A workshop conducted by Industry Canada and the Canadian Department of Finance consulted with angel scholars about conducting a general population survey. The cost of such a survey was estimated by Statistics Canada, the data gathering branch of the Government of Canada, to be at least Cdn \$1 million (US\$804,000).

When working with databases of SMEs, a number of problems emerge including 1) the tendency for standardized databases to be biased towards successful firms which is related to the age of the databases, and 2) the veracity of database information. These issues were discussed in detail when evaluating entrepreneurial research in the previous section in this chapter. Established database services include firms which, having survived longer, produces the effect of unintentionally culling less successful firms with time. Since the intent of angel research is to identify angels and investees, regardless of their success, only identifying older firms may systematically eliminate the angels who invested in firms that went out of business. Additionally, SMEs are often used as surrogates for entrepreneurial companies, yet small firms are not necessarily entrepreneurial firms and may have little or no need for the growth capital required by growing companies.

Thus, mailing lists, government lists, development agency lists and lists for sale are more likely to exclude angels who have invested in very young firms, firms that have gone out of business, and firms that are entrepreneurial and growth oriented, but not small. Nor is there any generalisation possible from findings from sample frames devoted to specific industries such as high tech firms or technology oriented firms. The costs of surveys that identify angels in these ways are likely to be low to moderate depending on whether the lists were purchased and from whom since some databases are expensive to acquire.

Another criticism regarding the use of mailing lists of SMEs is the low response rates (Mason & Harrison, 2001b). Central to this discussion are systematic errors (affected by non-response rates) and the reliability of the sample (based on random sample errors). In a multi-stage sampling design such as Aram's (1987) and Gaston and Bell's (Gaston & Bell, 1988) US investigations, large numbers of postal requests return a relatively small numbers of firms (200 out of 20,000 and 2,900 out of 240,000 respectively) and angels identified (68 of 200 and 551 of 2,900 respectively). Aram does not report any non-response biases for the central

and Great Lakes region study though two waves of surveys were conducted and many of the respondents were encouraged with up to four phone calls. Presenting some non-response data would have improved the reporting of systematic error. Gaston and Bell, in non-response tests ($n=20$), identified one significant difference between the original sample and the non-response sample related to increased proportions of investments in start-up-stage investees.

The issue of sample error and reliability is affected by the size of the sample and the size of the population. For population sizes of greater than 500,000 (US government statistics place the number of firms in the US in 2001 at 5,567,774) with proportion of population parameters less than 15 percent (an outside estimate of the proportion of companies using angel capital), a sample size of 435 such as in Gaston and Bell's (Gaston & Bell, 1988) work produces a reliability of approximately \pm five percent with a 95 percent confidence level. Thus, Gaston's study had sufficient numbers to reliably gauge population proportions and responses within at least a reasonable range of error and confidence levels. Aram's study resulting in 68 responses, with over 470,000 businesses is rendered largely exploratory since at least 322 responses would be required for \pm five percent reliability.

Securities Regulators Records

Securities regulators have requirements that apply to some equity-issuances and investors whereby their records could become a source for study. In Canada, for example, a private equity exemption relieves some ventures from the costly necessity of developing a prospectus when attempting to raise private equity. These exemptions are held by provincially-operated securities commissions which reflect economic and policy interests in each region and are thus different. Securities regulators' records could become a source for future investigation.

Sub-sectors of angels missing from this sample could include earnest or eager angels who have invested at a more informal level (regardless of compliance to securities laws), angels in

young start-ups and nascent firms, angels who are less well-versed in tax and securities regulations, and angels who have invested in entrepreneurial ventures that have yet to comply with securities legislation. More specifically, where exemptions are self-executing, angels who are friends, family, and close business associates of directors may be missing. From a practical standpoint, acquiring access to these records may be difficult, and the problems of non-uniform storage and retrieval may make this method more expensive.

Equity Investment Tax Incentive Records

In locations where tax incentives are offered to individuals who invest in qualified firms, provincial tax records contain information about informal investors. Not all businesses started in a region may be eligible to offer the tax incentives as certain restrictions apply and approvals necessary. Sub-sectors of angels missing from a methodology using such a list would include angels who are unaware of federal/provincial tax incentives which may result from a bias towards angels who do not make use of professionals in their investment dealings. First time angels might also be missing since virgin angels, in Britain at least, are less motivated by tax incentives (Stevenson & Coveney, 1994). More likely, however, would be the tendency to not reflect angels who have invested in ventures that are systematically de-selected by the registration requirements of the legislation.

Practical difficulties can occur in obtaining access to government documents regardless of provincial, federal or state regulations which can be costly in wasted time. Even with bureaucratic support, the information can be difficult to access. By way of example, the author had favourable discussions with several people in a tax incentive-issuing department, acquired verbal support from the records' administrator, and received positive feedback from a senior politician who later became minister of the same department. Despite all of these amenable relations, access to the data requested was never acquired.

Business Registration Records

Another method for sample selection that reaches angels by way of the firm attempts to identify informal investors via the cadre of new incorporations, partnerships and sole proprietorships required to register by provincial regulations. Using this methodology, companies are sampled from the known population of new companies which are publicly available within six to eight weeks. Provincial registries provide details about the companies as well as the names and addresses of the directors, proprietors and partners. The principals can then be sampled from these records. Proper survey design can easily weed out principals that are not angels.

This methodology reduces many of the problems associated with 1) unknowable populations, 2) age/success biases, 3) geographic areas where no formal networks exists, and 4) biases introduced by gate-keeping entrepreneurs. Incorporated companies are required to register with the government in order to become a legal entity, and sole proprietorships and partnerships must register with the province in order to conduct business. These records provide for a known and reasonably accurate universe of businesses that is defensible by definition. All businesses registered during a specified period can become part of the sampling frame for a random sample. Though the population of angels is unknown, sampling error is reduced, or eliminated, by sufficiently sized random samples from a known and complete population of businesses (Zikmund, 1986).

This method also provides a database of very young companies, often as young as two or three months old if that is desired. Because business registrations are more recent than Statistics Canada reports, Dun and Bradstreet listings, business directories and phone books, they are a better source for identifying new firms via the firms' address and/or that of the directors'. Age and success biases are resolved by selecting firms that are young and have yet to go out of business, a quality which is highly desirable (Aldrich et al., 1989). Also, locating

angels in this way ensures that regions that do not have angel networks or BISs have an equal chance of being selected. In addition, the ability to contact principals directly eliminates the extra step involved with gate-keeping entrepreneurs and the potential for their meddlesome effects.

The specific group of angels de-selected using this method are those who have not chosen to be listed as a director in the firms' registration records. It is thought that this group is small because 89.5 percent of Canadian angels have indicated their intention to serve on the board of directors, or be an advisor, to their investees (Riding et al., 1993). This percentage is suspect, however, since the sample from which it was drawn was a convenience sample as well. Nonetheless, those who do not choose to act as a principal (director, partner, etc.) represent a distinct and interesting group since the nature of their investment motivations -- and certainly their governance methods -- would be expected to be different.

If a company changes their identify in the case of a merger or acquisition, the newly created firm will appear in the new registrations. The records of both of the firms that are involved in the merger or acquisition still exist in the original records from the date they were originally incorporated. If, however, the acquiring firm does not change its corporate profile, no new registration will be apparent. This latter scenario does not necessarily pose concerns for this methodology since the reformulated company is a *new* company, but not technically a *young* company.

This method, sampling from the incorporation records of provincial registrars, is that which is used for this thesis. The merits have been compared to other sampling methods. The next section highlights the methodology in detail.

Table 5-2 – Possible Biases of Various Population Definitions

<i>Population Method</i>	<i>Sub-sectors Missing</i>	<i>Ease/Difficulty of Data Retrieval</i>	<i>Relative Cost*</i>
Securities Regulators	Seed capital and nascent angels; Geographic areas which are self-executing; Friends; Family; Business associates	Variety of regulators to deal with; Non-standard records; Requires regulators support	Moderate
Tax Incentive Records	Angels in ventures not registered by governments; Angels not engaging in professional advice;	Depends on bureaucratic support	Moderate
Angel Networks	Any angel who has not been selected by group elite; Inexperienced financial players; Non-financial maximising angels; Non-syndicating angels	Relatively easy using venture capital guides or known associates	Inexpensive
Business Introduction Service	Less wealthy angels; Angels who are not exposed to services; Angels focusing on smaller deals; Friends; Family;	Should be fairly easy given presence of such a service; May want to distribute surveys for researcher	Inexpensive
Random Sample of General Population	Given proper screening and methodological design, should reasonably cover all angels	Random dial generation equipment or techniques and large samples make this method difficult	Extremely Expensive
Lists and Association Databases	Angels investing in very young companies; angels investing in companies that have not survived	Relatively easy given cooperation of data owners	Inexpensive (list procured free) or Very Expensive (purchased)
Business Incorporation Records	Angels investing in non-incorporated firms; Angels investing without choosing to be a director	Information is public through retrieval methods may vary	Inexpensive to Moderate

*Relative costs are based on the time and effort required to: acquire approval to use data; actually receive the data; pay for the data; accommodate for various storage and retrieval methods of differing districts, departments or agencies; develop common data system; and transposing it into useful code for the survey design.

5.3 *Proposed Methodology*

The research hypotheses developed in Chapter 4 are based on an information-based theory of the existence of the venture capital industry which specifies certain relationships between variables. Determining relationships and effects of specific variables is most aptly addressed by quantitative methods of research (Wiersma, 1991). Quantitative approaches suppress unnecessary detail so that the relationships between the variables becomes the focus (Alreck & Settle, 1995). Some of the context of the investment situations to be studied is represented by the variables selected for review such as the motivations, deal generation behaviours and cognitive heuristics applied. As a number of variables are addressed, a multi-variate approach is adopted as well. The generation of relationships between the variables also supports the development of theory if the findings can be generalised.

Because a sizeable literature (Chapters 2 and 3) was used to formulate hypotheses using deductive logic (Chapter 4), and the variables would remain unchanged, a quantitative approach was adopted. Many of the investment events to be investigated, however, take place in time frames that may be as distant as decades. The historical nature of some of the events suggests a qualitative approach (Wiersma, 1991). The differing time frames, financial circumstances and public policies may act as additional features of context that are not captured in the quantitative approach. Thus, a three-part sequential research design was employed with two quantitative phases followed by in-depth case analyses (Creswell, 2003) which has been adopted in other similar research (Wright and Lockett, 2003).

The data collection process for the first phase quantitative portion of the research design has been undertaken using the business registrations sample selection method noted in the

previous section. This research design incorporated three distinct stages. The purpose of the first stage was to identify firms that had angels in their capital structure from a random sample of a broad universe newly incorporated companies. The interviewees were directors of companies that had been incorporated during two periods: a five-year period from 1992 to 1997 and a 10-month period spanning 1999-2000¹⁶. The second stage of the research design surveyed the selection of directors of the identified firms from the first stage in order to test the research hypotheses developed in Chapter 4. Survey instruments were designed in accordance with the considerations outlined in Alreck and Settle (1995). The third stage involved in-depth personal interviews with angels who have made several investments. The purpose of the case studies is to gather the stories that surround each investment to further validate the research and its results.

5.3.1 Research Design – Stage One

The objective of the first stage of the research design is to identify angels randomly from a broadly based universe in an effort to produce a representative sample. The effort to identify angels randomly, representatively and from a broad universe ensures that later statistical analysis will be free of as much bias as is possible where a review of the entire population of adults was not feasible. Though the previous section highlighted that a review of the general population of adults would produce a slightly better representativeness, it was discarded as a methodology due to the associated costs.

The area of study is the easternmost coast of Canada. The Canadian east coast is composed of four provinces, Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland.

Geographically isolated, the region, called Atlantic Canada, has historically been considered a

¹⁶ The first period was selected as it immediately preceded the survey and was long enough in duration to capture follow-on investment as well. The second period was selected specifically to capture younger firms and to improve results by the addition of a postal survey for those who chose not to respond by telephone, or who could not be reached by phone.

‘have-not’ region of the country. Previously, studies in the region suggested that very little informal venture capital took place (Gadbois, 1991), but more recent information refuted that contention (Atlantic Provinces Economic Council, 1994; Riding et al., 1993). Policy-makers became interested in the actual level of activity and the extent that it may vary from other regions of the country.

Because there were no BISs or BANs, any research would have to utilise methods that vary from the mainstream angel studies. Complete lists of the companies incorporated during the specified periods were provided by Nova Scotia and New Brunswick. The province of Prince Edward Island provided a random sample of their database, and in Newfoundland, a researcher hand-selected files. There is no reason to believe that there is any periodicity in these files¹⁷. Using a computer generated list of random numbers, companies were selected from the populations of new firms of Nova Scotia and New Brunswick. The random manner in which the sample was selected means every company registered during the relevant periods had an equal chance of being selected. For every business registration selected, the second director on the list was identified as the interviewee. The second director was selected as it was felt that the lead entrepreneur would likely be the first name. Using the second director listed avoided reaching the entrepreneur in every case. Every individual was called at least three times varying between morning, afternoon and evening to reduce biases that may result from interviewer or interviewee call times. Partnerships and proprietorship were not investigated in this study due to limited funds available. Investigations were limited to newly incorporated firms.

The first wave of the first stage of the research design was administered by phone since phone designs often have better response rates (Appendix 1). The phone survey was administered by

¹⁷ Periodicity is the tendency for recurring or systematic trends in the data that may lend a bias to the sample.

a small number of students who were trained with the survey instrument. Training included a review of financial instruments and investments, detailed understanding of the flow of the survey instrument, telephone role playing with the author, telephone role playing with other trainees, and occasional on-phone monitoring. Interviews were supervised. Each stage-one telephone interview lasted approximately a maximum of five minutes. The 328 interviews conducted represented a response rate of 39.0 percent. The interviews in 2000 were conducted in same manner except those who could not be reached by phone were sent a written version of the same survey (Appendix 2). The 571 interviews in 2000 represented a response rate of 36.3 percent, and the 160 written surveys returned represented a response rate of 35.6 percent. There is no difference in the response rates between the written survey and the telephone interviews in 2000. Table 5-3 summarises the sample, response rates, and rates of firms with angels amongst the respondents.

Table 5-3 - Summary of Sample Derived from Provincial Incorporation Registries

	1998	2000	
Population Size (# of firms incorporated during period)	35,766	5,723	
Period of Study	5 years	10 months	
Method of Inquiry	Telephone	Telephone	Postal
Sample (#)	840	1574	450
Respondents Interviewed (#)	328	571	160
Response Rate (%)	39.0	36.3	35.6
Percent of Companies with Angels Investing (#)	14.6	14.3	19.2

The universe of newly incorporated firms for the two periods under consideration is 41,489. The samples selected represented two periods. The 1998 survey spanned a 5-year period from 1992 to 1997 and the 2000 sample spanned a 10-month period between late 1999 and early 2000. A total of 1059 interviews and mail surveys were conducted by telephone and by post.

The rate of angel investment amongst the new venture community of directors and principals is considerable. At the level of the firm, 14.6 percent, 14.3 percent and 19.2 percent of newly incorporated companies indicated there was angel capital present in the firm's capital structure at one time or another. During the 1998 portion of the first stage of the research design, none of the companies was older than six years. Companies were generally less than 18 months old during the time of the 2000 portion of the initial stage.

5.3.2 Response Biases – Stage One

Typical biases that may emerge from a survey are non-response biases and response biases.

Non-response bias arises from the possibility that people who respond to a survey are different from those who do not respond, or that those who respond early are different than those who respond later. Response biases may result from using differing types of surveys, and or differing timing. A number of features in both stages of the research design were intended to reduce biases. Confidentiality and anonymity issues were addressed, and some publicity was arranged (Levy & Lemeshow, 1999). Interviewers were trained to handle a variety of questions that may arise from the pre-amble such as *How did you get my name?* and *How long will it take?* Telephone surveys that went unanswered were re-called at different times of the day and night to prevent biases associated with persons who may have been at work during normal working hours.

A number of features were introduced between the 1998 survey and the 2000 survey to assess biases. The first survey asked angels about the investment habits over the past five years, whereas the 2000 survey inquired of lifetime habits. The age of the firms assessed were also varied. The 1998 survey included a range of firms between two and seven years since incorporation, whereas the 2000 survey assessed firms that were between six and 18 months from incorporation. Lastly, non-response bias was addressed by the 2000 survey which included a postal version for those who did not respond to, or could not be reached, by phone.

The double wave of surveys in 2000 was an attempt to decipher non-response biases by mailing surveys to those who did not respond to the telephone protocol. The double-intensive sampling procedure improves estimates and results have higher reliability than either method alone (Levy & Lemeshow, 1999)¹⁸. Almost nothing is known about the companies or individuals that did not respond to either effort. The amount of information available about them is limited to their incorporated company names, company addresses, and directors' phone numbers.

The two sources of potential bias that can be interpreted are 1) non-response biases that may exist between the phone and mail respondents in the 2000 survey, and 2) biases that may exist due to the time difference between the 1998 and 2000. Regarding the former, four key variables were selected to decode any possible biases present between the phone respondents who were approached first, and mail survey respondents who were approached after they could not be reached by phone or refused to conduct a phone interview. The four variables are: the proportion of directors who made an informal investment, the proportion of firms that have angels in their capital structure, the mean number of investments made by directors surveyed, and the mean number of angels in newly incorporated firms. The sample sizes, percentages, means and statistical tests are shown in Table 5-4.

¹⁸ Mean_{dub} or $x_{\text{dub}} = (n_1x_1 + n_2x_2)/n$ where n = number of firms initially sampled; n_1 = the number of firms responding to the initial mailing; n_2 = the number of firms not responding to the initial mailing; x_1 = the mean number of angel among the successfully contacted first effort; and x_2 = the mean proportion of angels among the second effort.

Table 5-4 – Non-response Bias for 2000 Telephone and Postal Surveys

	Total Sample		Telephone 2000		Postal 2000		Statistical Test
	n	%	#	%	#	%	
Director made Investment	745	14.8	582	13.9	156	17.9	$\chi^2 = 1.589$; df = 1; $p = .207$
Firms with Angels in Capital Structure	707	16.1	552	15.0	148	20.2	$\chi^2 = 2.379$; df = 1; $p = .123$
	#	Mean _{dub}	#	Mean	#	Mean	
Number of Investments Made by Director	108	4.2	80	2.7	28	5.0	$t = -.869$; df = 27.973; $p = .392$
Number of Angels in Firm	109	2.3	81	2.9	28	2.0	$t = .833$; df = 107; $p = .406$

χ^2 – Chi Square test; t – independent-samples means test

None of the differences in percentages, nor means, were significantly different between the earlier telephone survey and the later postal survey. A greater percentage of postal respondents made informal investments (17.9 percent) than those approached by phone (13.9 percent), and a greater percentage of the firms approached by post (20.2 percent) reported having angels in their capital structure than the telephone respondents (15.0 percent). Directors responding by phone had a mean of 2.7 investments whereas survey respondents had a mean number of lifetime investments of 5.0. The last bias-testing variable is the number of angels present in the named incorporated company. Phone respondents had a mean of 2.9 angels in the firms and postal respondents had a mean of 2.0 angels in the incorporated firm.

Having ascertained that there is little difference between the earlier telephone surveys and the later, more reluctant postal survey respondents, attention turns to the possible differences between the 1998 telephone and 2000 telephone samples. The results of the response bias tests are displayed in Table 5-5. Significant differences were noticed between the two waves regarding the variables that relate to responses by directors about their personal activities. A

significantly greater proportion of directors in 1998 made informal investments (20.1 percent) than those interviewed in 2000 (13.4 percent), but the 1998 directors had a mean number of investments of 1.5 whereas the 2000 directors had a mean number of lifetime investments of 2.7. There were no significant differences between 1998 and 2000 regarding the percentage of firms with angels in their capital structure (15.2 and 14.5 percent respectively), nor the mean number of angels per firm (2.1 and 3.0 respectively).

Table 5-5 - Biases Between 1998 Telephone Sample and 2000 Telephone Sample

	Total		Telephone 1998		Telephone 2000		Statistical Test
	#	%	#	%	#	%	
Director made Investment	915	15.9	333	20.1	582	13.4	$\chi^2 = 7.067$; df = 1; $p = .008$
Firms with Angels in Capital Structure	868	14.8	316	15.2	552	14.5	$\chi^2 = .069$; df = 1; $p = .793$
	#	Mean	#	Mean	#	Mean	
Number of Investments Made by Director	172	2.6	66	1.5	73	2.7	$T = -3.011$; df = 78.560; $p = .004$
Number of Angels in Firm	155	2.5	48	2.1	75	3.0	$T = -1.046$; df = 121; $p = .298$

Thus, what has been observed is that the percentage of business angels resulting from the 2000 survey is significantly less than the percentage of business angels emanating from the 1998 survey, but that the 2000 business angels have made significantly more investments than the more numerous, but less investment-intensive, 1998 business angels. A number of factors could account for these findings. Firstly, the 1998 survey covered a span of five years ranging almost up to seven years prior to the 1998 survey's execution. The 2000 survey covered a 10-month span up to about a year and a half before the 2000 survey's execution. Thus, the firms in the 2000 survey were much newer so the sample was less subject to age and success biases. It is expected that a more complete coverage of these firms was possible

than the older 1998 sample which would have been subject to corporate delinquencies due to closures, bankruptcies and mergers. The increased mean numbers of investments is partly attributed to the re-wording of the question to include a lifetime of investments rather than just five years-worth of investments.

A explanation for the decreased proportion of angels in the population of newly incorporated firms may be related to economic events at the time. The early 1990s (the dates of many of the new firm incorporations for the 1998 study) were recessionary times and investment-minded individuals may have preferred to invest in higher-potential projects than more poorly-performing quoted markets. The economic situations were reversed during the 2000 study. In the 18 months prior to the study, the quoted markets were in a very favourable run-up. Investment-minded individuals may have preferred to invest in very highly performing quoted markets rather than the high risk informal opportunities. Furthermore, if angel participation and the finance they represent enhance the chances of survival one would expect a greater proportion of angels in the older sample of still surviving, more successful firms.

5.3.3 Research Design – Stage Two

The second stage of the research design was intended to survey the directors of those firms that had been identified as having angel capital in their capital structure (during the first stage of the research design). Also, any individuals who had identified themselves as angels during the first stage were included in the second-stage sample. The first stage was the intensive random sweep of newly incorporated companies, whereas the second stage was designed to target the firms identified and survey their directors in depth.

The second stage was conducted using a postal survey since some questions necessitated details from as many as four investments. The primary investments of interest were the initial and

subsequent investments – not the most recent as in some studies – in order to capture novice activity and habitual activity. The investments inquired of had taken place over decades and a postal written survey was judged to be the most appropriate to permit consideration of questions where the answers needed time for recollection.

The questionnaire was piloted by conducting seven pre-test surveys to explore the initial hypotheses and make changes to the survey instrument (Appendix 3). The seven angels included in the pilot study comprised five habitual angels and two novices. The pilot study took place in March 2001. A number of errors regarding question numbering and references to other questions were clarified, and the explanation of eligible investments was more carefully honed. Providing gifts, or the possibility of receiving a gift such as entering the person's name into a lottery for prize, has been known to produce higher rates of response (Miller, 1991). This inducement was offered in the form of a wine lottery for those who responded regardless of their angel status.

The second-stage survey was distributed in early June 2001. A total of 520 questionnaires were distributed to the directors of the 160 firms which identified angels as part of their capital structure in the first stage. On the first distribution, 55 surveys were returned due to incorrect postal addresses, 22 duplicates were identified, and 35 responses were received. A reminder was issued in mid June, 2001. Over the following four-week period, 25 more questionnaires were returned and one wrong address was further received. Excluding duplicates and returned surveys reduced the total number of survey distributed to 442.

The questionnaire was re-issued in September, 2001 excluding those who had already responded. During the month of September, reminder phone calls were made to recipients for whom a phone number could be located. An additional 65 surveys were received. In total, 125 questionnaires were returned by angels and directors of newly incorporated firms producing a

response rate of 28.3 percent. There were 43 angels amongst the respondents representing 34.4 percent of the respondents. The final survey response rates for the second stage are shown in Table 5-6.

Table 5-6 - Stage-Two Survey Response Rates

	2001	
	N	%
Original Distribution	520	
Cleaned Sample Size ¹⁹	442	100
Non-Respondents	317	71.7
Respondents Response Rate :	125	28.3
Non-Angels	82	18.5
Angels	43	9.8

Subsequent to the coding and data entry for the detailed survey, a small number of multi-investing angels were selected for personal interviews. Details regarding the context of individual cases permits the refinement of theory and the findings (Howorth, Westhead, & Wright, 2003). Insights that are difficult to reveal by data analysis alone can be ascertained with detailed case studies. It also improves the validity of interpretations drawn from the data. Habitual angels were selected to improve the number of investments to discuss and to personalise the stories of habitual angels. Four interviews were conducted in person, one interview was conducted by phone and one angel chose to discuss his investments and situation by written correspondence.

¹⁹ Fifty-six (56) surveys that had incorrect addresses and were returned by the post office were removed from the sample as well as 22 surveys that were addressed to individuals whose names were already on the distribution list.

5.3.4 Non-response Bias – Stage Two

Tests for non-response biases are often only available on relatively superficial characteristics (Bryman & Cramer, 2001) which was the case with the second stage sample since very little is known about non-respondents other than their address. A test for response bias was conducted on the province from which the respondents and non-respondents resided. Fifty-one (50.8) percent of the sample was from Nova Scotia, 21.1 percent were from New Brunswick, 14.2 percent were from Prince Edward Island, and 13.9 percent were from Newfoundland. The proportions of surveys returned for each of the provinces was 55.2 percent, 14.4 percent, 15.2 percent and 15.2 percent respectively. By observation, the proportions per province appear to be very similar comparing those who responded to the total sample overall. There were no significant differences between the proportions of provinces that made up the sample and the proportions of those responding [$\chi^2 = 4.721$; $df = 3$; $p = .193$].

Tests for response bias between the first and second mailing of the second stage survey were conducted using some demographic variables to identify possible biases that may have resulted as a consequence of the follow up mailing and personalised phone calls. *Net worth available for future investments*, *Age* and *Entrepreneurial background* were selected as descriptive of the angels rather than their investments. Since *Net worth available for future investments* may be suggestive of angels who are still very interested in investing, it was thought these angels may be eager to reply. *Age* was selected because the availability of time to engage in responding to surveys may influence returns. It was thought that younger respondents may be more busy and therefore less inclined to respond. The prevalence of entrepreneurship in the angel population may have precipitated their response to be different than those who had no entrepreneurial background (in either direction). The results of these tests are shown in Table 5-7. Mann-Whitney tests on net worth did not disclose statistical

differences between the two groups [Mann-Whitney $U = 78.5$; $Z = -1.376$; $p = .169$], nor did the tests on age [Mann-Whitney $U = 115.500$; $Z = -1.523$; $p = .128$]. Chi-square tests of frequency with the angels’ entrepreneurial status were also conducted in the event that this variable was the source of bias. There were no significant differences between those who did, or did not, have an entrepreneurial background and the first and second mailings [$\chi^2 = .287$; $df = 1$; $p = .592$].

Table 5-7 - Tests for Response Bias Between First and Second Mailings in Second Stage of Research Design

	Order of Receipt	N	Mean	Std. Deviation
Net Worth Available for Future Investments (%)	First Mailing	17	7.94	9.852
	Second Mailing	13	11.92	8.848
Age	First Mailing	23	4.04*	.976
	Second Mailing	14	4.57*	.852
			Obs. Frequency	
Entrepreneurship Background	First Mailing	22	72.7	
	Second Mailing	14	64.3	

* The age category represented by a value of 4.0 - 4.9 is 46 – 55 years of age.

5.3.5 Representativeness Testing

Tests of representativeness are meant to determine how well the sample mimics the population. Historically, this has been difficult for business angels since most studies do not attempt to sample from the broader population, but rather use BISs, BANs and other convenience samples. There are two notable exceptions. Both Gaston and Bell’s (1988) study, and the GEM (Bygrave et al., 2002) studies, used broad definitions and sampling frames and are therefore more likely to be representative of the broader population of business angels.

One test of representativeness may be the proportion of family investments made by angels. Farrell and Howorth (2003) hypothesize that representative samples will have a greater proportion of business angel investments directed at family members. Most studies based on BANs and snowball samples do not report on family investments implying (but not stating or reporting) that such investments are not within the investment repertoire of the angels in their studies. It is unclear whether they almost never report on the number of investments made to a family member because they have not made family investment, or perhaps because they failed to inquire. If an angel is identified via a BAN or BIS, researchers may expect that angels' investments will be arms' length. The two exceptions lend credit to the hypothesis. Gaston's (1989) study using a probability sample of 240,000 U.S. businesses identified a 10-percent rate of family investing though the source of the company database is not identified. The GEM study (Bygrave, 2002) reported a family investment cohort of 47.9 percent when a random dial procedure was applied to the adult population in 29 countries. Issues of trust (angels know the entrepreneurs) and the ease with which family-member entrepreneurs can identify angels (family entrepreneurs are likely to know about family angels) are the principal arguments underlying the proposition that broadly based samples from angel populations will produce more family-oriented investments.

The first stage of this research design produced family-oriented investments more in the range of the broadly-based studies noted above. A screening question about family investments revealed that 34.5 percent of directors identified as angels made at least one investment to a family member. Given the survey design, it was possible to identify three cohorts: angels who make only family investments ($n=33$), angels who make both family and arms' length investments (called combination angels in this analysis) ($n=16$), and arms' length-only investors ($n=92$). Arms' length-only investors make significantly more investments (average of 2.2) than family-only investors (average of 1.2) [$p < .01$], however, combination angels make significantly more investments (average of 3.88) than either family- or arms' length-

only investors [$p < .01$]. Thus, improved representativeness appears to have been the result of this research design.

The group responding to the more detailed second-stage survey made family-oriented investments at a rate of 11.6 percent. This percentage related to their first four investments since the investments investigated during the stage-two of the research design related to business angels' *first four* investments – not their most recent, nor their lifetime investments.

In summary, using family-oriented investments as a guide to representativeness, the results of the first and second stages of this novel research design are encouraging as both are greater than those implied by research studies using BANs and snowball samples.

Specifically, this method is an improvement over the method used by Gaston and Bell (1988) because it avoids use of Dun's Market Identifier files which are known to under-represent newer businesses (Aldrich et al., 1989; Gaston & Bell, 1988). Telephone methods were used for the initial sampling stage which produce improved response rates and postal and telephone methods were used in the second stage of the process permitting improved results (Levy & Lemeshow, 1999). There were no gatekeepers involved to reduce the flow of information to the business angels since the directors names and addresses are included in the publicly available database. Furthermore, participation in this survey was not limited to three years as was the case with Gaston and Bell (1988). Additionally, if the age of the firms is specified, that specific age range can be identified in the registries.

Limitations

Some of the limitations of this method are the expense of locating phone numbers for directors and companies if they are not included in the records and there exists a desire to use a phone protocol. It is also possible that only some directors are noted on official records, but

not all directors or advisors. Furthermore, some directors are shielded by the use of legal representatives as official contacts rather than the detailed list of directors. In many cases, solicitors were responsive to the inquiries. Though a two-stage design was employed in this study, a somewhat less detailed survey could have accompanied the stage-one intervention reducing the need for stage two. The first stage may simply have inquired of the angels identified when they were first approached. Non-incorporated, but registered, sole proprietorships and partnerships were not included in the sampling frame as it was thought that a sufficient number of angels would be found amongst those companies. However, registries exist for non-incorporated entities as well.

An additional limitation may be related to the geographic context of the population from which this sample is drawn. While the sample seems representative of the Atlantic Canadian population, Atlantic Canada may not be representative the Canadian population. Canada is one of the largest countries in the world relative to land mass, and has four distinct regions: the West, Ontario, Quebec and Atlantic Canada. Atlantic Canada is the smallest geographically (540,000 sq km. about the land mass of the UK), as well as the smallest population-wise (2,400,000 persons). The area does not possess large numbers of venture capital firms though its rate of entrepreneurship is comparable to the rest of Canada. Notably, this region may differ from other regions where major studies have been conducted such as California, Texas, the populous north-eastern US, and London where formal venture capital is more obvious and the population more concentrated. Thus, the generaliseability of this study may be better suited to sparsely populated, or more rural regions.

5.3.6 Research Design – Stage Three

Case studies are a type of qualitative data collection and analysis that improves the internal validity of quantitative research by building confidence in the results (Wiersma, 1991). There

is precedent for a research design that follows quantitative studies with qualitative case studies in the venture capital and entrepreneurship literature, particularly where the research purpose is to study repeat behaviours. Wright et al. (1999) conducted a quantitative survey instrument followed by case studies in their examination of serial entrepreneurs and serial buy-outs. They used a structured questionnaire in face-to-face interviews with serial entrepreneurs to validate the quantitative results, interpret findings and clarify issues. More recently, interviews with entrepreneurs and venture capitalists followed a quantitative study regarding secondary buy-outs and buy-ins (Wright, Robbie, & Albrighton, 2000) helping to triangulate data results and assist in interpretation.

In this study, a purposive sampling method was adopted for the qualitative stage of the research design. Rather than selecting randomly from the respondents (Wiersma, 1991), eight habitual business angels were selected. Only habituals were selected for two reasons. First, habituals were selected based on the larger number of investments under their jurisdiction. Second, it was hoped that that the small number of in-depth cases would produce insights about relationships surrounding re-investment (Levy & Lemeshow, 1999). In this stage, patterns were sought by comparing the respondents' comments with that which is noted in the literature, and where their conversation may suggest causal links or explanations for phenomena (Yin, 1989). Due to limitations arising from the nature of the work as a doctoral thesis, involving novices at this stage would have been at the expense of involving habituals. A trade-off was made in favour of the habituals.

The eight selected had made four or more investments each. Interviews were arranged with six of the eight. Interview was the principle method of data collection for the qualitative approach since neither observation, nor document recovery suited the subject matter. After receiving an introductory letter regarding the follow-up interview request, the prospective interviewees were called to establish a date and time to talk (Appendix 4). The six interviews

were held over a period of six months in the spring and summer of 2004. The intervening time between interviews allowed for analysis, reflection and interpretation of previous interviews.

The interview design was established in a semi-structured approach. After reviewing the ethical considerations for human subjects required by the researcher's university, the interviewees were asked to relate the story about their first investment, second, third, etc. Prompts elucidated the nature of their motivations at the time, how they identified the deal in which they invested and how they exited the deal. The qualitative data were analysed simultaneously with the interview data collection process (Eisenhardt, 1989). Transcripts of key points (not verbatim) were made of the tapes to facilitate the process of identifying patterns. The information was edited along the lines of the research questions posed in Chapter 4 and a comparison across research subjects was conducted.

5.3.7 Review of Data Collection Process

Table 5-8 is an summary of the overall data collection process. Stage one comprises the three separate surveys (of almost identical information) which was designed to elicit the firms that had business angels in their capital structure. The three components of the first stage had response rates of 39.0, 36.3 and 35.6 respectively. A total of 161 firms were identified from the various elements of the first stage (48+82+31). The proportions of the sample that were identified as firms with angels were 14.6, 14.3 and 19.2 percent respectively.

Stage two was a postal survey sent to the directors of those firms in order to test the hypotheses outlined in Chapter 4. A total of 442 directors could be reached by mail that arose from the 161 firms. The second stage has a response rate of 28.3 percent and collected the

detailed survey responses from 42 angels. Thirty-four (34.4) percent of the respondents were angels.

Table 5-8 - Summary Overview of Data Collection Process

		Number	Percent	Sub-Set Percent
Stage One 1998 Telephone Survey	Population Size	35,766		
	Sample Size	840	100.0	
	Non-respondents	512	60.9	
	Respondents:	328	39.0	100.0
	Firms with Angels	48		14.6
	Firms Without Angels	280		85.4
2000 Telephone Survey	Population Size	5723		
	Sample Size	1574	100.0	
	Non-respondents	1003	63.7	
	Respondents:	571	36.3	100.0
	Firms with Angels	82		14.3
	Firms Without Angels	489		85.6
2000 Postal Survey	Population Size	5,723		
	Sample Size	450	100.0	
	Non-respondents	290	64.4	
	Respondents:	160	35.6	100.0
	Firms with Angels	31		19.2
	Firms Without Angels	129		80.7
Stage Two 2001 Postal Survey	Sample Size – (directors of 161 firms with angels from three tiers of Stage One (48+82+31))	442	100	
	Non Respondents	317	71.7	
	Respondents:	125	28.3	100.0
	Angels	43		34.4
	Non-angels	82		65.6
Stage Three Personal Interview	Habitual Angel Sample Size	29	100.0	
	Habitual Angels Interviewed	6	20.7	

The third stage was comprised of six discussions with habitual angels who responded in detail to the postal survey distributed at the second stage. The interviewees provided significant detail regarding a large number of investments and were selected for their significant repeat investment behaviour.

5.4 Measures

The survey is designed to facilitate an understanding of 1) differences in motivations and deal generation between novices' investments and habitual angels' first investments, 2) cognitive heuristics 3) changes in motivations and deal generation behavior over the angels' first four investments, and 4) exits information on the basis of exit type. Having information from a variety of investments allows successes to be understood by their comparison to failures, and by having as many phenomena as possible to observe (McGrath, 1999). For this study, an angel investment was defined as "an investment of personal money into a new or expanding business that is largely operated by someone else, and that is not a quoted company or stock market investment." The stage-two survey imposed no time limits, nor arms' length requirements.

5.4.1 Investment Measures

Information was requested about the first four investments made by the business angel. The intent was to be able to compare novices and habituals at the level of the first investment – before habitual angels were known to be habitual angels. (This necessity arises from the criticism that it is inappropriate to compare habitual angels' most recent investment with the first investment of novices (Rosa et al., 1996).) For each investment, angels were requested to provide data about: the year of the investment, whether follow-on investments were made, the amount of the follow-on investments, dividends paid, the year of the dividends, exit routes, the year of the exit, terminal payments, the year of the terminal payments, and the percentage of shares taken. All the information related to a single initial investment was treated as one individual investment. For example, an initial investment and two subsequent follow-on investments to the same investee by the same angel was counted as one investment. An initial investment with no follow-on was also counted as one investment.

5.4.2 Motivation Measures

The literature was consulted as regards developing measures for motives. Research clearly indicates the willingness of angels to trade away some economic returns for social, geographic, and personal reasons. Financial and economic motivators dominate (Harrison & Mason, 1992), but angels indicate a distinct willingness to trade some wealth for geographic closeness, socially beneficial products, socially beneficial companies, the opportunity to work with highly regarded investors or exciting investments (Haines et al., 2003; Seymour & Wetzel, 1981), and the opportunity to provide input into the entrepreneurial process (Harrison & Mason, 1992). Having fun, excitement, satisfaction, and working with fun companies (Benjamin & Margulis, 1996; Harrison & Mason, 1992; Pereiro, 2001; Wetzel, 1981) rates as a secondary motive for some angels, but can also be the primary motivator for others (Coveney et al., 1996). Altruistic and socially responsible motives are said to exist when economic reward is deliberately traded for social benefits and they motivate some angels (Harrison & Mason, 1992; Pereiro, 2001; Sullivan, 1994). Interestingly, the financial concept underpinning portfolio theory and risk reduction – diversification -- is not a strong motivator for angels' investment decisions (Freear et al., 1994).

Though some angels pursue purely economic motivations -- as in Argentina where 60 percent of Pereiro's (2001) sample were wholly economically motivated -- informal venture capitalists have fewer fiduciary obligations, do not need to worry about the fate of their employment, and do not have the same concern regarding future funding considerations as formal venture capitalists. Riding et al.'s (1993) study of Canadian angels was the first to consider motivations in detail. The nation-wide study uncovered three factors that governed angels' actions. *Affiliation* engendered a sense of participation with the individuals, a sense of creating something, and excitement from the association. *Comfort* (described by the authors as due diligence) was a combination of market potential concerns, and knowledge of

the businesses, industries, or people involved. The *financial* motive is driven by confidence in the business's principals and the expectation of large returns.

In developing a scale for measuring motivations, the intent was to identify items that motivated angels to invest in private equity as an asset class, rather than investment criteria that were the reasons angels selected one investment over the other. Using the literature noted above, the final motives for the scale were further elaborated to create nine dimensions that were thought to be as complete as respondents would need to fully convey their motivations most precisely. For example, financial motives were divided into *capital appreciation*, *profits and dividends*, and *tax benefits*. Non-financial motives included the *challenge of* (being part of) *a new venture*, *fun*, *excitement*, *helping aspiring entrepreneurs*, *creating employment* and whether or not the venture geographic *location* (was) *economically depressed*. The latter two motives were introduced based on common public perception of possible reasons for informal investing in the region. Motives that were more investment-specific, thus appearing more like assessment criteria, rather than motivations, were culled. These included motives such as having good feelings for the management (Riding et al., 1993) and diversification (Freear et al., 1994). Respondents rated each on a scale from 0 – *Was Not a Consideration at All* to 5 – *Extremely Important Consideration*. On the questionnaire, the motivations for each of the four possible investments were rated separately.

5.4.3 Deal Generation Measures

The questionnaire measured deal generation activities with a list of options developed based on the behaviours used by entrepreneurs to identify business allies (Freear, Sohl, & Wetzel, 1995b) as well as other activities gleaned from discussion with angels, venture capitalists and judgments of possible deal generation behaviours. Freear et al.'s (1995b) techniques were employed to create the list of 17 options that angels might employ to identify deals.

Table 5-9 highlights the nine measures used by Freear et al. (1995) which were elaborated to be more specific for the current study. A six-point defined scale rated each technique’s usage ranging from 0 - *not used* to 5 - *used frequently – weekly*. Each of four possible investments were rated separately.

Table 5-9 - Deal Generation Measures Created from Freear et al. (1995)

Freear, Sohl and Wetzel’s (1995) study	This study
Active search	<ul style="list-style-type: none"> • <i>Read newspaper for business listings</i> • <i>Placed advertisement</i>
Chance encounter	<ul style="list-style-type: none"> • <i>Overhead colleagues talking about business proposal</i>
Trade shows	
They called us Cold calls Other entrepreneurs	<ul style="list-style-type: none"> • <i>Was approached by the entrepreneurs</i> • <i>Was approached by the entrepreneur who was a friend at the time</i> • <i>Was approached by a family member</i> • <i>Was approached by an acquaintance of the entrepreneur</i>
Venture capitalist or investor	<ul style="list-style-type: none"> • <i>Was approached by a broker or intermediary</i>
Friends	<ul style="list-style-type: none"> • <i>Asked neighbours and community members about possible investments</i>
Attorneys	<ul style="list-style-type: none"> • <i>Asked lawyer if s/he knew of opportunities</i>
Accountants	<ul style="list-style-type: none"> • <i>Asked accountant if s/he knew of opportunities</i>
Bankers	
Industry network and contacts	<ul style="list-style-type: none"> • <i>Asked work colleagues about possible investments</i> • <i>Asked suppliers</i> • <i>Asked customers</i>
Investment forums and gatherings	<ul style="list-style-type: none"> • <i>Joined group interested in investing in new ventures or opportunities</i> • <i>Became a member of a business introduction service</i>
Professional associations	<ul style="list-style-type: none"> • <i>Contacted board of trade</i>
Other	<ul style="list-style-type: none"> • <i>Other</i>

5.4.4 Cognitive Heuristic's Measures

The questionnaire's representativeness heuristic was measured using the procedure outlined in Busenitz and Barney (1997) by posing two decision-making scenarios. Respondents selected one of two answers – one based on statistical reasoning and the other based on heuristic reasoning – and were asked to give an explanation of their reasoning. The scenarios were revised slightly to account for a Canadian respondent rather than an American standard. Guidelines for coding heuristic or statistical reasoning are based on Fong and Nisbett (1991). Examples of representative (heuristic) reasoning include statements such as *I buy locally*, *people are more important than machines*, or *from my personal experience*. Statistical reasoning answers are those that make reference to the reports or studies, based on large numbers of responses, that were presented in the scenario.

The scenarios and coding were based on those used by Busenitz and Barney (1997). A code of 0 was given to responses of statistical reasoning and a code of 1 to responses that used rules of thumb or personal principles that identify representativeness. From the two questions, a respondent could have a minimum of zero uses of representativeness (two incidents where statistical reasoning was employed); one use of statistical reasoning and one use of heuristic reasoning; or two incidents of representativeness (zeros incidents of statistical reasoning employed). Survey results were discarded where respondents did not explain their reasoning, or where their reasoning was indecipherable.

For the overconfidence heuristic, the questionnaire posed a general knowledge question followed by an assessment of their confidence in their answer. This is similar to Fong and Nisbett (1991), and Busenitz and Barney (1997). The question, *What is the leading cause of death in North America?* had a choice of two possible responses, heart disease or cancer, following which respondents had to rate their confidence in the answer they chose. Busenitz and Barney (1997) use five such questions whereas this survey used one. Respondents'

confidence ratings employed one of six possible responses ranging from *50-59 % sure (a complete guess)* to *100 % sure (absolutely sure)*. The heuristic overconfidence exists when the average percentage of correct responses for the respondents in an identified confidence level category is less than that confidence level. In other words, those respondents who felt they were 100 percent sure of their answer can be said to be overconfident if only 80 percent in that category had the right answer. Alternatively, a group can be said to be under-confident if 90 percent of the respondents who placed themselves in the 60-69 percent sure, answered correctly.

Following Busenitz and Barney (1997), a measure was developed for each respondent using the correctness of their answer to the general knowledge question and their stated confidence level. Respondents were given a score of one if their answer is correct and zero if their answer was incorrect and confidence levels were represented by their associated probability. For example, *50 – 59 percent sure* was coded as .5, *60 – 69 percent sure* was .6, and *100 percent sure* was coded as 1. The overconfidence measure was constructed by subtracting each respondents' points (zero or one) from their confidence level thus producing ordinal measures from either -0.5 to 0 (overconfident), or $+0.5$ to 1 (under-confident). Since a *50-59 percent sure* answer is a total guess, there are no categories below this range and therefore no measures fall in the $+0.1$ to 0.4 range. Thus, the range of measures is normalized to resemble a continuum from -0.5 to $+0.6$ to facilitate means testing. A positive value indicates overconfidence and a negative value indicates under-confidence.

5.4.5 Exit Measures

Exit and harvest data were supplied in detail including initial investments, follow-on investments, dividend payments, terminal payments, and the year in which each of these monetary transactions took place. Thus, it was possible to calculate rates of return and

multiples using a consistent formula rather than relying on respondents to calculate and report their returns. Also included in the exit questions were a range of exit methods that were based on the work of Mason and Harrison (2002) and Macintosh (1997). These included: *Still own my own shares*, *Sold my shares to the entrepreneur*, *Sold my shares to another person*, *Sold my shares to a venture capitalist*, *Venture was sold to another company*, *Venture went public*, *Business closed voluntarily*, *Business went bankrupt*, and *Still in business but no hope of recovering shares*. The detail includes numerous categories of responses, but imparts the clearest understanding of what exit transpired regarding the investment.

5.5 Summary Statistics and Bi-variate Analysis

The results of the data analyses begin in this section. Further bi-variate and multi-variate analyses are presented as the order of the hypotheses suggests in Chapters 6 and 7. The following sub-sections outline some of the key characteristics of the investors and the investments they made. Each sub-section provides general descriptives of the sample and then details related to novice and habitual angels. In some cases, the cohorts are further refined to highlight interesting results.

The exploratory nature of the study is intended to construct issues and hypotheses for future testing in replication studies and other geographical settings (Westhead and Wright, 1998), or for comparative purposes with non-representative samples.

Therefore, results which are significant at the 0.10 level are presented (hesitantly) even though the .05 level is accepted as the normal threshold for significance. This is in order that potentially significant or important relationships are not overlooked due to the exploratory nature of the work. Each section first explores the findings regarding the sample overall, then investigates issues related to novice and habitual angels, and then further explores habitual angels by ascertaining differences between serial and portfolio angels.

5.5.1 Respondent and Investment Profile

Forty-three angels were amongst the 125 respondents to the detailed, second stage survey of directors of firms that had angels in their capital structure. This is a small group, but sufficient for exploratory study and viable for the use of inferential statistics. The number of investments they have made in their lifetime ranges from 1 to 25, and the total number of investments represented by the angels in the sample is 136. Angels presented detailed and specific data about 90 separate investments. The group was dominated by male respondents though three women (7.0 percent) represent a larger proportion than that observed in narrowly-defined, non-random studies. Their presence lends weak support to the representativeness of the sample. The largest age group is the 46 – 55 year old category representing 48.8 percent of the sample total.

Of the 43 respondents, 32.6 percent are novice angels ($n=14$) and the remaining 67.4% are habitual angels. The novices are represented by one-time angels at 11.9 percent and first-time angels at 19.0 percent. Of the total, 20.9 percent are serial angels, and 46.5 percent are portfolio angels combining to make the 67.4% habitual total. Of the three women, one is a novice representing 7.1 percent of novices, and two are habitual angels representing 6.9 percent of the habitual angels.

Both groups of novices, one-time and first-time investors, by definition, have made one investment. The number of investments made by habitual angels ranges from 2 to 25. The average number of investments per habitual angel is 4.2 (median = 3). If two outliers of 17 and 25 are excluded from the habitual analysis, the mean number of investments per habitual angel is 3.0 (median = 2). Not surprisingly, Mann-Whitney U tests confirm the significance

of differences between novices and habituals [$U = .000$; $Z = -5.426$; $p = .000$] and one-time novices and habituals [$U = .000$; $Z = -3.682$; $p = .000$] at a level below .01.

Additional exploration of the habitual angels indicates that serial angels have made a mean number of lifetime investments of 2.4 (median = 2). Portfolio angels have made a mean number of lifetime investments of 5.0 (median = 3) and 3.22 after filtering the outliers (median = 3). Nonparametric tests of differences between serial and portfolio angels are weakly significant at the 10 percent level [$U = 56.000$; $p = .087$].

Age was measured by category with code “4” representing the *46 - 55 year old* age range. The means for novices, habitual angels, serial angels and portfolio angels all fall within the age category of 46 to 55 years old. Portfolio angels are, on average, younger, serials are older and novices fall between the two. The novices are equally dominated by the 46 – 55 year old category and the 56 – 65 years old category; 71.4 percent of their numbers are equally distributed between these two groups. Serial angels appear to be older when they start investing since they do not begin informal investing until the 46 – 55 age category. This age group however is the dominant one for serials as 77.8 percent of their numbers are found there. Portfolio angels appear to be start younger on average as they have respondents in each of the categories starting at age 26 – 35. Comparatively, the portfolio angels have 25.0 percent in the 26 – 45 categories and 45.0 percent of their numbers in the 46 – 55 age category. There is definitely a wider spread of ages amongst the portfolio angels than the serial angels.

5.5.2 Intention to Re-invest

A third (32.6 percent) of respondents indicate they do not intend to make further informal venture capital investments whereas 62.8 percent indicate they intend to make further

investments. Visual inspection of the re-investment intention data indicates that age has an association with angels’ future investment intentions. Those who indicate no intention to re-invest are all in the mid to late age categories, and almost all who intend to re-invest are in the mid to younger age categories as shown in Table 5-10 below.

Table 5-10 - Intention to Re-invest by Age

			Age					Total
			26 - 35	36 - 45	46 - 55	56 - 65	66+	
Intention to Re-Invest	No	Count	0	0	4	7	3	14
		% within Age	.0%	.0%	19.0%	77.8%	100.0%	34.1%
	Yes	Count	2	6	17	2	0	27
		% within Age	100.0%	100.0%	81.0%	22.2%	.0%	65.9%
Total		Count	2	6	21	9	3	41
		% within Age	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

The small counts in some cells prevent chi-square analyses.

Each group of angels had similar proportions regarding their intention to re-invest; one-third did not plan on re-investing and two-thirds did. Intention to re-invest is the quality that distinguishes one-time novices from first-time novices. The 38.5 percent of one-time novices are one-time novices and the remaining 61.5 percent of novice angels who intend to re-invest are first-time novices. Habitual angels had similar proportions regarding their intention to re-invest; 32.1 percent indicated they would not re-invest and 67.9 percent indicate they will re-invest. One-third (33.3%) of serial angels did not intend to re-invest whereas two-thirds (66.7%) did intend to re-invest. Thirty-two percent (31.6%) of portfolio angels do not intend to make any further investments and 68.4 percent intend to make future investments.

5.5.3 Net Worth Available for Investment

The net worth available for future investments ranged from zero to 50 percent of net worth with a mean of 14.4 percent. Some respondents had previously indicated no intention of re-investing, yet answered this question. Given that their responses may be somewhat more unstable than the responses of those who indicated they intend to re-invest, the non-re-investing responses are filtered from the analysis. Likewise, some respondents who indicated they planned to invest again reported having no net worth available for re-investment. This scenario does not preclude some of their net worth becoming available through future exits, planned returns from other investments, or the ability to make money available if a good opportunity is identified. These respondents are included in the analysis. A similar analysis was included for the same data without two responses which were considered to be outliers as described in data cleaning techniques in Bryman and Cramer (2001). The mean net worth available for future investments drops to 11.4 percent.

Table 5-11 – Percent of Net Worth Available for Future Informal Investments

	Net Worth Available for Future Investments	Net Worth Available for Future Investments Excluding Outliers
N	22	20
Mean (%)	14.43	11.38
Median (%)	10.00	10.00
Std. Deviation (%)	12.534	7.925
Minimum (%)	0	0
Maximum (%)	50	25

First-time novices have a mean of 15.7 percent of their net worth available for future investment (or 10.0 percent of their net worth when adjusted for outliers). Habitual angels' mean net worth available for future investment is 13.8 percent of their net worth (or 11.1 percent adjusted for outliers). For angels who intend to re-invest, novices' and habituals' net

worth available for future informal venture capital investments do not differ significantly [Mann-Whitney U = 48.00; Z = -.323; $p = .747$], nor do the scenarios where several outliers are excluded [Mann-Whitney U = 33.00; Z = -.760; $p = .447$].

Table 5-12 – Percentage Net Worth Available for Future Investments by Novice/Habitual Angel

	Net Worth Available for Future Investments		Net Worth Available for Future Investments Excluding Outliers	
	Novice	Habitual	Novice	Habitual
N	7	15	6	14
Mean	15.7	13.8	10.0	12.0
Median	5.00	10.00	7.50	10.00
Std. Deviation	17.895	9.859	10.488	6.946
Minimum	0	5	0	5
Maximum	50	40	25	25

The mean net worth available for future investing by serial angels who intend to re-invest is 15.0 percent (10.0 percent excluding outliers) and that of portfolio angels is 13.1 percent. The details are shown in Table 5-13 below. There is no significant difference between serial and portfolio angels on either the net worth available for future investments [Mann-Whitney U = 24.500; Z = -.303; $p = .776$] or the percentages adjusted for outliers [Mann-Whitney U = 15.500; Z = -.967; $p = .364$].

Table 5-13 - Net Worth Available for Future Investments by Serial and Portfolio Angels

	Net Worth Available for Future Investments		Net Worth Available for Future Investments Excluding Outliers	
	Serial Angel	Portfolio Angel	Serial Angel	Portfolio Angel
N	6	9	5	9
Mean	15.0	13.1	10.0	13.1
Median	10.00	10.00	5.00	10.00
Std. Deviation	13.794	7.046	7.071	7.046
Minimum	5	5	5	5
Maximum	40	25	25	25

5.5.4 Investment Amounts

Novice and Habitual Investment Activity

Initial, follow-on and total investment amounts are shown Table 5-14. For the initial investment, means for habitual angels (\$69,000) exceed novices means (\$19,614) by a considerable margin²⁰. The middle panel shows the total amount of follow-on investments for each grouping. The mean for novice angels' follow-on instalments is \$3,500 whereas habitual angels is \$48,500 [Mann-Whitney U = 3.000; Z = -1.549; $p = .121$). In a few cases, for the total first investment calculations, analysis has been conducted excluding some significant outliers, to improve measures of central tendency (Bryman & Cramer, 2001)²¹.

The last panel of Table 5-14 show total investments (the sum of the initial investment plus any follow-on investments). The mean for novice angels' total investments is \$20,364 and habitual angels' mean total investment for their first investment is \$79,423 [Mann-Whitney U = 139.000; Z = -1.222; $p = .222$]. The large variation in initial, follow-on and total investments between novice and habituals' first investments is largely due to five large investments by some angels causing large standard deviations. Nonetheless, the propensity to invest large sums at the outset of their informal investment activities may be an indication of a future habitual angel *ex ante*.

Subsequent Investment Activity

Subsequent investment activity relates to the investigation of habituals' first, second, third and fourth investments and points to trends that may indicate learning. The median amount

²⁰ As the distribution of the investments is not normal and the range of investment values is large, medians are reported as well and in some cases may be more meaningful than means.

²¹ The effect of outliers in regressions is also quite pronounced. As the data will ultimately be used in a regression analysis, results which exhibit extreme values are noted.

of funds invested on the first investment is \$22,500 and increases steadily to \$50,000 for the fourth investment. The means for first investments are \$51,715 rising and declining over the next three investments, never exceeding \$100,000.

The difference between the mean dollar values of the first (excluding outliers) and second investment amounts is weakly significant [$Z = -1.794$; $p = .073$] (denoted by ^a), and the difference between the mean dollar value of the second investment and the fourth investment is weakly significant [$Z = -1.753$; $p = .080$] (denoted by ^b). These weakly significant differences focus attention on the second investment, which is the investment upon which the definition of habitual hinges. The second investment is larger in both cases.

A similar pattern is observed for follow-on investments (middle panel of Table 5-14). The habitual angels' means and medians are quite variable over the four-investment range, rising for the second investment and declining sharply on the third investment. The means for follow-on instalments can be substantial as seen in the second and fourth investments. The ranges are also particularly noteworthy, ranging up to \$350,000. Furthermore, the proportion of angels making follow-on instalments increases as investment frequency increases. Twenty-two percent (22.5%) of novice investors make follow-on investments whereas, by contrast, 46.2 percent (six of 13) and 42.9 percent (three of seven) of third- and fourth-time investors make follow-on instalments respectively. Follow-on investment is improved with investment frequency. (There were not enough items to conduct three- and four-way Friedman's tests for the follow-on investments.)

The third panel shows the total investment amounts of habitual business angels across four investments. Friedman three-way and four-way related samples tests indicated

significant differences in the total sums invested by habitual angels for their first, second, third and fourth investments [3-way; $\chi^2 = 9.333$; $df = 2$; $p = .009$] [4-way; $\chi^2 = 7.983$; $df = 3$; $p = .046$].

The pattern observed in the three panels regarding habitual angels' subsequent investments indicates that the mean increases considerably for the second investment, then drops precipitously for the third investment, and rising slightly for the fourth investment. The sharp rise on the second investment (and subsequent decline) occurs for each of the initial, follow-on and total investment amounts across the four investments. This pattern might indicate considerable enthusiasm for informal investing by seeking a larger second investment. Lack of funds, waning enthusiasm, or a poor experience or outcome may result in the sharp decrease in third investments. This appears to be similar to a pattern of increases and decreases that Mason and Harrison (1997a) referred to a bimodal.

Table 5-14 – Initial, Follow-on and Total Investments for Novice and Habitual Angels

	First Investment				Second Invest-ment	Third Invest-ment	Fourth Invest-ment
	Total Group	Total Excluding Outliers	Novice	Habitual	Habitual	Habitual	Habitual
Initial Investment n	40	35	14	26	26	13	7
Mean	\$51,715	\$20,817 ^a	\$19,614	\$69,000	\$96,057 ^{ab}	\$74,654	\$87,142 ^b
Median	\$22,500	\$16,000	\$18,000	\$25,000	\$27,500	\$30,000	\$50,000
Std. Deviation	\$100,556	\$17,626	\$17,162	\$121,380	\$163,122	\$86,127	\$97,845
Minimum	\$1,600	\$1,600	\$1,600	\$4,000	\$2,500	\$4,500	\$25,000
Maximum	\$500,000	\$65,000	\$65,000	\$500,000	\$700,000	\$250,000	\$300,000
Follow-on n	9		3	6	7	6	3
% of cohort above	22.5		21.4%	23.1%	26.9%	46.2%	42.9%
Mean	\$33,500		\$3,500	\$48,500	\$90,714	\$22,666	\$70,000
Median	\$5,000		\$3,500	\$17,500	\$50,000	\$20,000	\$50,000
Std. Deviation	\$64,311		\$500	\$76,206	\$120,084	\$16,693	\$72,111
Minimum	\$1,000		\$3,000	\$1,000	\$5,000	\$1,000	\$10,000
Maximum	\$200,000		\$4,000	\$200,000	\$350,000	\$50,000	\$150,000
Total Investment n	40	35	14	26	26	13	7
Mean	\$58,752 ^d	\$21,717	\$20,364	\$79,423 ^d	\$120,480 ^{cd}	\$85,115 ^{cd}	\$117,142 ^{cd}
Median	\$22,500	\$16,000	\$18,000	\$25,000	\$42,500	\$35,000	\$75,000
Std. Deviation	\$117,454	\$18,385	\$17,467	\$141,748	\$173,268	\$89,917	\$100,947
Minimum	\$1,600	\$1,600	\$1,600	\$4,000	\$2,500	\$5,500	\$25,000
Maximum	\$500,000	\$65,000	\$65,000	\$500,000	\$700,000	\$250,000	\$300,000

^a – differences in means noted by ^a are significant below the .10 level using Wilcoxon signed ranks test

^b – differences in means noted by ^b are significant below the .10 level using Wilcoxon signed ranks test

^c – differences in means noted by ^c are significant below the .01 level using Friedman nonparametric 3-way related samples test

^d – differences in means noted by ^d are significant below the .05 level using Friedman nonparametric 5-way related samples test

Four-time Respondents

Four-way Friedmans' tests isolate the respondents who indicated making more than four investments, and who provided data for four investments. The activities of this group provide insight into potential learning influences since they have the most experience, and are good comparators for the remaining habituals and novices. The data for this group are isolated in Table 5-15. Visual inspection of the data demonstrates that four-time investor means range from three to seven times the means for novices or other habituals. This is the case for both the initial investment and the total investments.

The novices and four-time investors were weakly significantly different for the first initial investment [Mann-Whitney $U = 35.000$; $Z = -1.766$; $p = .077$] and total investment [Mann-Whitney $U = 35.500$; $Z = -1.734$; $p = .083$]. Thus, evidence is emerging that much of the variation between habitual and novice business angels may be a result of the activities of the four-time investors, and they exhibit noteworthy differences at the level of the first investment. This is consistent with some of the entrepreneurship literature where small number of individuals make up considerable portions of the variation (Westhead & Wright, 1998).

Significant differences were also noted between the four-time investors and remaining habituals for the second initial [Mann Whitney $U = 36.00$; $Z = 207.00$; $p = .044$] and total amounts [Mann-Whitney $U = 24.000$; $Z = -2.673$; $p = .006$]. A Friedmans' non-parametric 4-way paired analysis of four-time habitual angels indicates significant differences amongst the total investments [Friedman $\chi^2 = 7.983$; $df = 3$; $p = .046$] of the four-time investors. Total investments increase on the second investment and then declines significantly for third and

fourth investments increasing the significance in a 3-way paired analysis [Friedmans' $\chi^2 = 9.333$; $df = 2$; $p = .009$]. A less obvious, but similar trend, was evident in the earlier analyses. Four-time investors not only make significantly greater investments than the remainder of the group, but also have a widely varying investment patterns that mimic (or perhaps cause) swings noted in other habitual investments.

In addition, four-time investors provide a support role to the provision of follow-on funds. Four-time investors average approximately \$33,000 in follow-on funds across the four investments whereas other habituals average less than an additional \$5,000 in follow-on funds for the total investment. The mean for novices increased by less than \$1,000 between their initial investment and the total investment.

Table 5-15 - Initial and Total Investments For Novice, Habitual and Four-Time Business Angels

	First Investment			Second Investment		Third Investment		Fourth Investment
	Novice	Other Habituals	Four-Time Habituals	Other Habituals	Four-Time Habituals	Other Habituals	Four-Time Habituals	Four-Time Habituals
Initial Investment	n							
Mean	14	17	9	18	8	5	8	7
Median	\$19,614 ^c	\$26,764	\$148,778 ^c	\$40,972 ^a	\$220,000 ^a	\$30,100	\$102,500	\$87,143
Std. Deviation	\$18,000	\$25,000	\$50,000	\$25,000	\$115,000	\$30,000	\$62,500	\$50,000
Minimum	\$17,162	\$26,157	\$183,636	\$39,936	\$256,515	\$25,914	\$100,142	\$97,845
Maximum	\$1,600	\$5,000	\$4,000	\$2,500	\$25,000	\$4,500	\$15,000	\$25,000
	\$65,000	\$100,000	\$500,000	\$150,000	\$700,000	\$70,000	\$250,000	\$300,000
Total Investment	n							
Mean	14	17	9	18	8	5	8	7
Median	\$20,364 ^d	\$27,941	\$176,666 ^{de}	\$49,583 ^b	\$280,000 ^{be}	\$36,299	\$115,625 ^e	\$117,142 ^e
Std. Deviation	\$18,000	\$25,000	\$50,000	\$27,500	\$277,500	\$30,000	\$80,000	\$75,000
Minimum	\$17,467	\$26,871	\$212,309	\$50,586	\$242,899	\$37,874	\$101,363	\$100,947
Maximum	\$1,600	\$5,000	\$4,000	\$2,500	\$25,000	\$5,500	\$20,000	\$25,000
	\$65,000	\$100,000	\$500,000	\$150,000	\$700,000	\$100,000	\$250,000	\$300,000

a – means denoted by ^a are significantly different below the .05 level using Mann-Whitney U tests

b – means denoted by ^b are significantly different below the .01 level using Mann-Whitney U tests

c – means denoted by ^c are significantly different below the .10 level using Mann-Whitney U tests

d – means denoted by ^d are significantly different below the .10 level using Mann-Whitney U tests

e – means denoted by ^e are significantly different below the .05 level using Friedmans 4-way related samples tests

f – means denoted by ^f are significantly different below the .01 level using Friedmans 3-way related samples tests

It is unclear why four-time habituals are obvious from the outset. Are they richer individuals who have more resources to devote to informal investment activities, or are they individuals who are more financially aware and are successful in identifying valuable investments thus permitting re-investment? There is certainly enough evidence to substantiate a tentative link that habitual angels are different from novice angels at the outset and some qualities (other than the size of their first investment) may be able to distinguish them.

5.5.5 Shares Taken

As a group, angels take a mean shareholding equal to 27.3 percent for their first investment. Habitual angels take notably larger share holdings than novice angels on their first investment. The mean percentage of shares taken over the course of four investments is presented in Table 5-16. Novice angels acquired a mean of 20.1 percent of shares on their investment compared to habitual angels mean of 29.9 percent [Mann-Whitney $U = 66.500$; $Z = -1.800$; $p = .072$]. Two outliers, when excluded from the analysis, reduces the novices shares to 10.4 percent and the habituals to 26.9 percent [Mann-Whitney $U = 42.5$; $Z = -2.336$; $p = .019$].

Habitual angels' percentage of shares taken on subsequent investments increases and levels out at a median of between 25 to 40 percent, but these increases are not significant using Wilcoxon related samples tests. Thus, the fourth investments' sharp rise to 40 percent does not significantly indicate angels' growing concerns about securing rights with larger shareholdings.

Table 5-16 - Percentage of Shares Taken by Novice and Habitual Angels

	First Investment Habitual			First Investment Excluding Outliers		Second Invest- ment	Third Invest- ment	Fourth Invest- ment
	Whole Group	Novice	Habitual	Novice	Habitual			
N	34	9	25	8	24	21	12	9
Mean	27.29	20.14 ^a	29.87 ^a	10.38 ^b	26.92 ^b	33.88	35.58	34.44
Median	23.25	6.60	25.00	5.00	25.00	25.00	25.00	40.00
Std. Dev.	25.446	31.406	23.141	10.099	18.321	29.906	29.491	16.478
Min.	0	2	0	2	0	0	0	0
Max.	100	100	100	24	51	100	100	50

a – Mann-Whitney nonparametric tests of independence significant below the .10 level
b – Mann-Whitney nonparametric tests of independence significant below the .05 level

The data regarding serial and portfolio angels’ shares are shown in Table 5-17. In every instance, portfolio angels take more shares than serial angels. Serial angels means range from 18.3 percent to 25.5 percent whereas portfolio means range from 32.1 to 38.8 percent. Those differences between serial and portfolio angels are weakly significant for the first investments [Mann-Whitney U = 38.5; Z = -1.908; *p* = .056] and the first investments excluding outliers [Mann-Whitney U = 38.5; Z = -1.741; *p* = .082].

In general, the larger investments by habituals are associated with larger share holdings as well although the share holdings do not tend to vary as much as the investments. Business angels engaging in successive investments may make less detailed calculations regarding valuations by being sensitive to the amounts of equity that they feel they need for their risk tolerance, or sensitive to the equity that the entrepreneur is prepared to part with.

Table 5-17 - Percentage of Shares Taken by Serial and Portfolio Angels

	First Investment		First Investment Excluding Outliers*		Second Investment		Third Investment		Fourth Investment	
	Serial Angel	Portfolio Angel	Serial Angel	Portfolio Angel	Serial Angel	Portfolio Angel	Serial Angel	Portfolio Angel	Serial Angel	Portfolio Angel
N	9	16	9	15	6	15	2	10	1	8
Mean	18.33 ^a	36.35 ^a	18.33 ^b	32.07 ^b	23.83	37.90	25.50	37.60	.00	38.75
Median	15.00	41.17	15.00	33.00	22.50	33.00	25.50	25.00	.00	40.00
Std. Deviation	11.726	25.666	11.726	19.927	16.315	33.496	34.648	30.041		10.938
Minimum	0	0	0	0	5	0	1	0	0	25
Maximum	40	100	40	51	50	100	50	100	0	50

a – means denoted by ^a differ below the .10 level in Mann-Whitney U tests

b – means denoted by ^b differ below the .10 level in Mann-Whitney U tests

* - one large outliers was removed from this group

5.6 Summary and Discussion

This chapter explores business angel data collected using a broad definition and a sampling methodology that attempts to achieve greater representativeness. These efforts are intended to draw a more comprehensive depiction of business angels. This chapter delves into the heterogeneity that exists by population definitions that include family and friends as well as sampling methods that attempt to capture angels outside of BANs and BISs. Methodologies, measures and preliminary analyses were presented for some key variables such as intentions to re-invest, the number of proposals reviewed, net worth still available for informal venture capital investment, amounts invested and shares taken. These results were presented for the group overall, for novice and habitual business angels, and for serial and portfolio habitual angels.

To enable greater use of statistical analysis, and improved reliability and validity, random sampling of known populations (such as methods where angels are derived via the firm) were developed and are appropriately broad as called for by Mason and Harrison (1997a). These methods enabled the capture of smaller angels, family angels, women angels, and angels who do not form or join groups. The proposed methodology improves representativeness and makes allowances for non-response bias. In addition, the research design makes it possible to observe data over several 'occasions' thus improving the capacity to observe learning over several periods, events, or actions (McGrath, 1999). The provision of means and comparisons over a possible four investments strengthens this study.

Very few studies report on the contribution to family businesses made by habitual business angels which are observed to be substantial. Since rapid growth firms and intrepid entrepreneurs are able to find angels, it is reasonable that their family members, as well, would approach them for finance. Acknowledging the proportion of their investment funds

devoted to relations and family-operated businesses opens new avenues for understanding business angels. Some habitual angels make investments to family relations as well as arms' length individuals in numbers significantly exceeding those of arms' length-only investors.

Sampling from a known population allows us to generate accurate estimates that approximately 17.3 percent of newly incorporated companies have angel intervention defined as personal funds contributed at, or following, the start-up that are provided by individuals other than the lead entrepreneurs. This is an advance as similar types of estimates have been rare. Mason and Harrison's (2001b) review of estimation methods indicates most estimates are primarily presented in dollars or pounds rather than proportions of new firms being incorporated. This percentage exceeds the five percent of firms that Wetzel (1986a) originally estimated though his estimate excluded family and friends' investments, and was later revised upwards (Wetzel, 1994). This method works to improve the admittedly crude estimates. The estimate is in the same direction and magnitude as would be suggested the GEM study results (2.5 percent of the adult population) since there are more population and households than businesses (Bygrave et al., 2002).

Business angels have between 11 to 14.4 percent of their net worth available for re-investment in future informal venture capital opportunities. This amount is similar to that found in Freear et al. (1994). Specifically, novices are prepared to devote the least amount of their net worth to informal investments and portfolio angels would allocate the most. Novices are earlier in their informal venture capital investing careers and may be unwilling to invest in such endeavours until the outcomes of their present activities have materialised. Additionally, they may have less absolute wealth at this stage and are unprepared to devote more funds to future investments.

The median amounts for business angels' initial investments start at \$22,400 and rise steadily over the four investments to \$50,000. A weakly significant increase in the second investment, when compared to the first and fourth, implies that first-time angels (those who plan to re-invest) do so with gusto. They step in tepidly and then increase their median investment amounts over time indicating they have increasing funds to devote to informal investment as time and investment frequency passes, or perhaps they have had successful first forays into informal private equity ownership and desire more, or perhaps that their appetite for investing was piqued and needs satiating.

In this sample, habituals are characterised by a tendency to provide follow-on finance in larger amounts, but not significantly so. The proportion of habitual angels who make use of follow-on finance increases with investment frequency indicating that habitual angels come to possess a knowledge of the venture capital investing process in general, an understanding of investment staging and know that information will be revealed during the investment process. They withhold funds destined for later stage activities until those activities are ready to be deployed. With investment frequency, this sample gain a greater understanding of the entrepreneurs' possibility for misallocation of funds, or perquisites, or other inappropriate uses, and therefore hold onto the funds longer. An alternative interpretation is that habitual angels have more funds available and are more capable of providing additional finance. These scenarios are complementary.

Differences in investment amounts between novice and habitual business angels is principally driven by four-time informal investors who invest significantly more than novice angels initially and upon subsequent investments. These four-time habitual angels curb their enthusiasm for extravagant deals as investment frequency increases. Although the value of their investments decline after the second investment, their investments are still substantially larger than those of the other less-frequent habitual investors. There is a good indication that

habitual angels can be identified *ex ante* on the basis of their first investment suggesting there are fundamental differences between habitual angels' nature and novices.

The mode for habitual angels' subsequent total investments indicates a significant upward trend. However, a pattern emerges with habitual angels' mean investments whereby the second investment takes a wild upswing, a precipitous retreat on the third investment, and then a slow increase for the fourth. (This pattern is observed in total and initial investments.)

The recurrence of such a pattern begs for rationales. Such a pattern may be observed if a favourable initial investment caused an angel to be enthusiastic about informal private equity investing causing them to re-invest. Their enthusiasm may cause them to over-invest, or invest unwisely on the second investment where the angel commits too much money. If their enthusiasm caused them to act unwisely, and they made a poor second choice, the angel pulls back on their contributions to the third and fourth investments. The curbed investment amounts on the third and fourth investments may be a result of acquired knowledge, thus causing multi-habitual angels to tame their initial exuberance. Their accumulating knowledge may include moral hazard and adverse selection issues such as entrepreneurs are not always capable of producing the expectations set forth in the business plan, entrepreneurs are not equally capable, and it is difficult to select investments even with very good information. An alternative explanation is that the larger total investment amounts on the second investments could be re-investment of the returns from the first investment whereby angels are seeking to avoid capital gains issues. The smaller subsequent investments (after the second investment) may be a result of poor previous returns forcing their future investing techniques into smaller sum categories. Again, these explanations are complementary.

This pattern emerges in Table 5-14 – Initial, Follow-on and Total Investments for Novice and Habitual Angels, however, part of the explanation appears in Table 5-15 - Initial and Total

Investments For Novice, Habitual and Four-Time Business Angels. In the latter, one sees that this pattern is driven by the four-time angels even from the very outset.

The percentage of shares taken by habitual angels differs significantly from those taken by novices. This may be explained by the larger number of dollars spent by habituals. This combination suggests that habitual angels take more shares per dollar of investment than novices do. Because this observation is discerned at the first investment, it implies inherent differences between the two groups because it takes place at a time when they are both still novices. There may be an attitudinal or cognitive predisposition by habitual angels to assume more shares per dollar of investment. Portfolios were always noted to take more shares than novices and in increasing amounts. The demands on the portfolio angels' time and schedule might preclude them from actively participating in firm activities. To that end, portfolio angels may view the possible board representation and increased voting rights that accompany larger share holdings, as a substitute means of control.

Near the beginning of the analysis, it was shown that habitual angels tend towards reviewing an increasing number of proposals over time and that the sums of their investments tend to decline over time. The changing nature of the behaviour of these individuals indicates that significant changes in their behaviour may be a result of learning effects. Acquiring increased information from previous investments and altering informational concerns and needs improve as time and investment frequency advance.

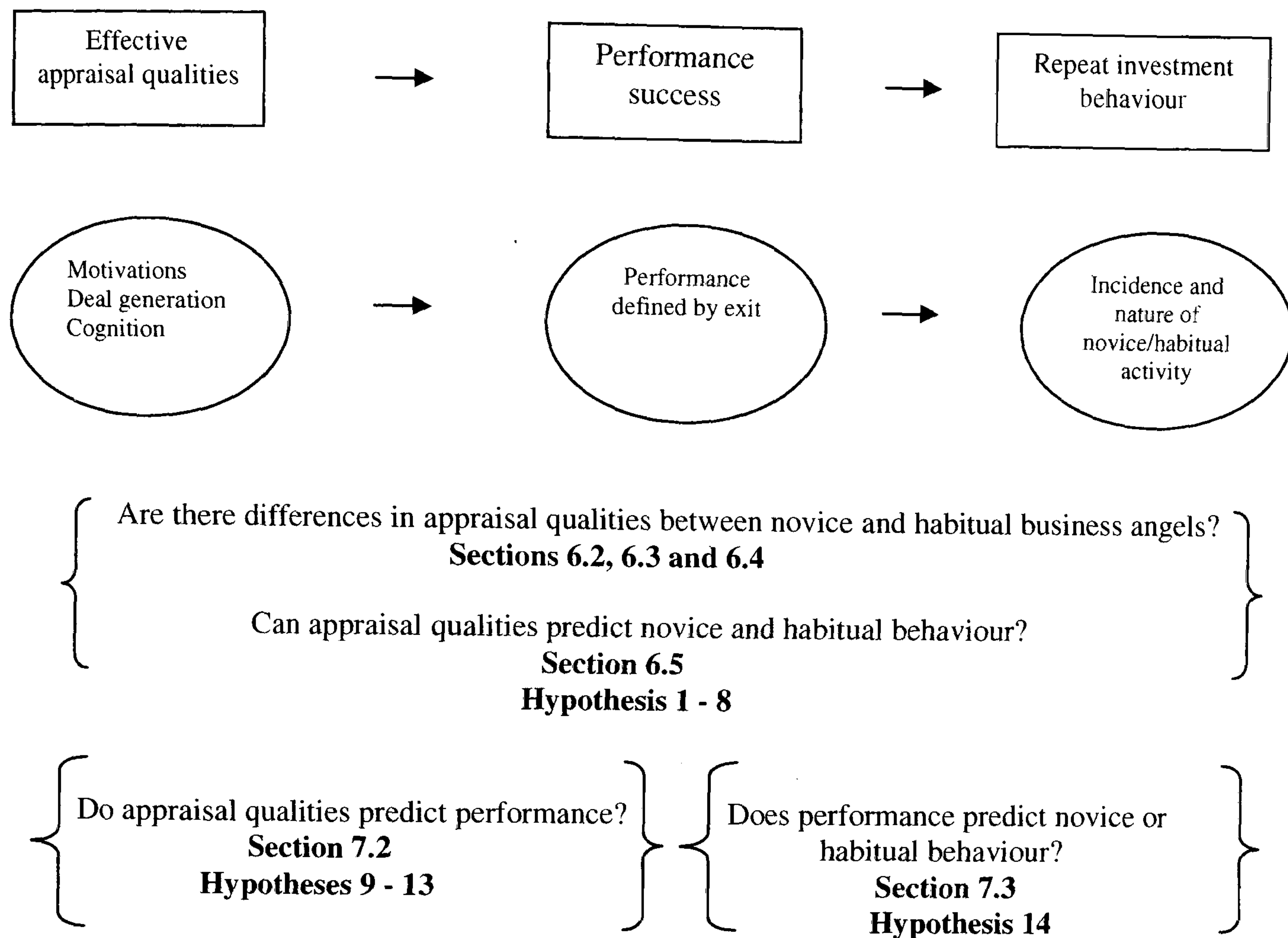
6 Results Related to the Appraisal Qualities of Novice and Habitual Business Angels

6.1 Introduction

Chapters 6, 7 and 8 outline the results of the quantitative and qualitative analyses. The model of the key relationships between appraisal qualities, performance success and repeat investment behaviour are illustrated in Figure 6.1 along with the relevant chapters where the results are found. Chapter 6 investigates the essential underlying questions of whether there are differences in appraisal qualities between novice and habitual business angels (Sections 6.2, 6.3 and 6.4) and answers the questions of whether or not appraisal qualities can predict novice or habitual activity (Section 6.5). The more elemental analysis within these is addressed in Chapter 7. Section 7.2 addresses whether appraisal qualities determine performance as measured by exit, and Section 7.3 addresses whether performance is related to repeat investment behaviour. Chapter 8 investigates a number of habitual angels from a case study perspective and addresses relevant issues based on their anecdotal recollections.

Figure 6.1 outlines the information argument as it relates to the formal venture capital industry (squares) and the relationship of how it would related to the informal industry (ovals). The large brackets identify the questions to be answered for each element of the relationship and the chapters in which those questions will be addressed. The first part of Chapter 6 addresses whether novices and habituals differ in their use of appraisal qualities and whether or not those appraisal qualities can predict whether someone will become an habitual.

Figure 6.1 - Model of Informal and Formal Venture Capital Results by Chapter



The purpose of this chapter is to test the hypotheses dealing with the appraisal qualities, their differences between novice and habitual angels, and their ability to predict habitual behaviour. The appraisal qualities are composed of angels' motivations, deal generation activities, and pre-disposition to the use of cognitive heuristics. Motivations are first addressed from a bi-variate and multi-variate approach (principal components analysis (PCA)). The chapter then proceeds by reviewing deal generation as it relates to novice and habitual angel activity using methodologies similar to the previous section. Cognitive heuristics are reviewed in the next sub-section. The next section presents a logistic regression to assess the associations between habitual activity and appraisal qualities. A parsimonious

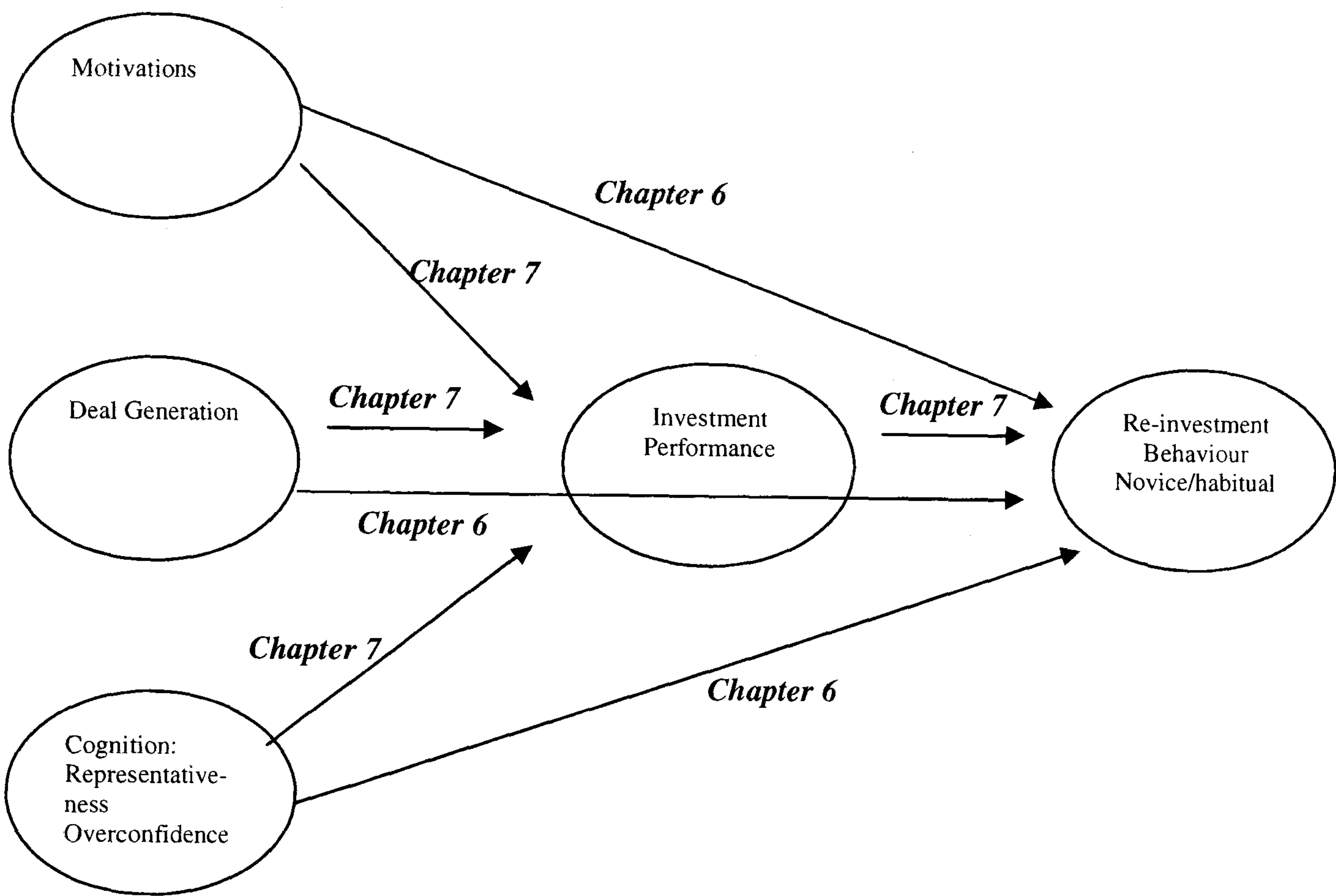
model of the appraisal qualities that predict habitual behaviour is developed. Each major section concludes with a discussion and summary of the findings.

It is noteworthy that most of the analyses in this study gives way to the observation that novices are often compared with habitual angels' most recent investment (Rosa et al., 1996) establishing, arguably, a partial comparison. In all of the analyses here -- with the exception of those efforts intended at identifying learning effects -- the comparisons are made between novices and (those who ultimately came to be) habituals at the level of first investment. This is a novel contribution of this dataset.

Chapter 7 looks at the individual relationship between appraisal qualities and their ability to correlate and predict performance. The second major section of Chapter 7 examines whether or not the successful performance of an exit predicts habitual behaviour. Chapter 8 comprises six case studies that provide specific situations to illustrate findings and explain anomalies from Chapters 6 and 7. Chapter 8 represents the third stage of the research methodology and was outlined in Chapter 5. The semi-structured interviews provided context and illustrated the relationships noted above. Semi-structured interviews reveal specific situations that help to explain the relationships hypothesised.

The various appraisal qualities and their relationships with habitual behaviour is more aptly illustrated in Figure 6.2. The three appraisal qualities are outlined on the left. The arrows indicate potential relationships between the three key stages of the hypothesised re-investment process as well as the chapters in which the relationships are addressed. Thus, the relationship between appraisal and habitual behaviour is discussed in Chapter 6. The relationship between appraisal and financial investment performance, and the relationship between investment performance and re-investment are addressed in Chapter 7.

Figure 6.2 - Appraisal, Investment Performance and Re-investment Behaviour



6.2 Motivations

This section investigates hypotheses 1 and 2 and relates to the collection of motives that make up investment intentions, motivations on first and subsequent investments, and the differences between habitual and novice angels’ motivations. This section proceeds by first examining the investment motivations of the group overall. Then the investment motivations of novice and habitual business angels are compared at the level of the first investment, followed by the possible learning effects of changes in habitual business angels’ motivations. An exposition of the range of motivations for serial and portfolio angels is followed by a multi-variate

analysis using principal components analysis. The final sub-section in this section is the summary and discussion of findings.

Table 6-1 presents the frequencies of the five-point scale of the nine named motivations. A mixture of competitive and financial motivations consistently occupy the top three rankings. *Idea looked like a winner* and *capital appreciation* are the most important motives with nearly identical means of 3.56 and 3.55 respectively. *Profits and dividends* is the only other motivation with a mean indicating very important consideration (3.00). The lukewarm interest in *tax benefits* (1.73) is slightly exceeded by *help an aspiring entrepreneur* (2.23) and competitive spirit of *challenge of new venture* (2.00). There is a considerable range evident amongst the motives.

Table 6-1 - First Investment Motivation Frequencies and Means

	Percent Responding in Each Category (# respondents)						Total Number Responding	Mean	Std. Dev.
	0 Not a Consider- ation at All	1 Very Little Consideration	2 Some Consideration	3 Important Consideration	4 Very Important Consideration	5 Extremely Important Consideration			
Idea Looked Like Winner	7.7 (3)	5.1 (2)	5.1 (2)	17.9 (7)	33.3 (13)	30.8 (12)	39	3.56	1.50
Capital Appreciation	12.5 (5)	0.0 (0)	12.5 (5)	17.5 (7)	10.0 (4)	47.5 (19)	40	3.55	1.74
Profits & Dividends	10.0 (4)	12.5 (5)	7.5 (3)	27.5 (11)	22.5 (9)	20.0 (8)	40	3.00	1.60
Help Aspiring Entrepreneur	25.0 (10)	17.5 (7)	15.0 (6)	12.5 (5)	12.5 (5)	17.5 (7)	40	2.23	1.85
Challenge of New Venture	32.4 (12)	8.1 (3)	13.5 (5)	24.3 (9)	16.2 (6)	5.4 (2)	37	2.00	1.68
Fun & Excitement	31.6 (12)	5.3 (2)	26.3 (10)	21.1 (8)	13.2 (5)	2.6 (1)	38	1.87	1.53
Tax Benefits	32.4 (12)	16.2 (6)	21.6 (8)	13.5 (5)	8.1 (3)	8.1 (3)	37	1.73	1.63
Create Employment	47.4 (18)	21.1 (8)	13.2 (5)	15.8 (16)	2.6 (1)	0.0 (0)	38	1.05	1.23
Area Economically Depressed	66.7 (24)	16.7 (6)	11.1 (4)	5.6 (2)	0.0 (0)	0.0 (0)	36	.56	.91

- 0 – Not a consideration at all
1 – Very little consideration
2 – Some consideration
3 – Important consideration
4 – Very Important consideration
5 – Extremely important consideration

6.2.1 Comparison of Novice and Habitual Motivations

Comparing the first investment motivations of novice angels with the first investment motivations of those who go on to become habitual angels explores whether differences existed when both cohorts were still novices. Finding differences at this level would suggest that habitual angels have an inherently different set of motivations that may predispose them to later habitual behaviour because evidence is present before any subsequent investment events took place. Means, medians and standard deviations for first investment motives for novice and habitual angels are shown in Table 6-2. Novices are segmented into one-time angels and first-time angels on the basis of their intention to re-invest. Such a table permits comparisons between one-time angels and first-time angels, one-time angels and habituals, and first-time novices and habituals. The small number of one-time novices hampers statistical comparisons with both habituals and their first-time counterparts.

One-time novices were most motivated by *Idea looked like a winner*, *Capital appreciation*, and *Fun and excitement*. First-time novices were most motivated by *Capital appreciation*, *Challenge of a new venture*, and *Profits and dividends*. Habitual business angels were most motivated by *Idea looked like a winner*, *Capital appreciation*, and *Profits and dividends*. One-time novices were least motivated by *Area economically depressed*, *Create employment* and *Tax benefits*. First-time novices were least motivated by *Help aspiring entrepreneur*, *Area economically depressed* and *Create employment*. Habitual business angels were least motivated by *Area economically depressed*, *Create employment* and *Tax benefits*.

Table 6-2 - Motivations of First Investment For Novice and Habitual Angels

		Novices		Habituals
		One-Time	First-Time	
Capital Appreciation	N	4	7	28
	Mean	2.75 ^a	3.29	3.79 ^a
	Median	3.00	4.00	5.00
	Std. Deviation	.500	2.289	1.707
Tax Benefits	N	3	7	26
	Mean	2.33	1.71	1.62
	Median	2.00	2.00	1.00
	Std. Deviation	1.528	1.890	1.627
Profits & Dividends	N	4	7	28
	Mean	2.50	3.14	3.07
	Median	3.00	4.00	3.00
	Std. Deviation	1.000	1.952	1.631
Idea Looked Like Winner	N	3	7	28
	Mean	3.00	2.86 ^b	3.93 ^b
	Median	3.00	3.00	4.00
	Std. Deviation	1.000	1.773	1.274
Create Employment	N	3	7	27
	Mean	1.67	1.14	.89
	Median	2.00	.00	1.00
	Std. Deviation	1.528	1.464	1.121
Fun & Excitement	N	3	7	27
	Mean	2.67	1.29	1.93
	Median	3.00	.00	2.00
	Std. Deviation	.577	1.704	1.567
Help Aspiring Entrepreneur	N	4	7	28
	Mean	3.50 ^e	.43 ^{ce}	2.57 ^c
	Median	3.50	.00	2.50
	Std. Deviation	1.291	.787	1.794
Area Economically Depressed	N	3	7	25
	Mean	1.00	.57	.40
	Median	.00	.00	.00
	Std. Deviation	1.732	.976	.645
Challenge of New Venture	N	3	7	26
	Mean	3.00	3.14 ^d	1.65 ^d
	Median	3.00	4.00	1.50
	Std. Deviation	.000	1.464	1.672

a -- pairs of means denoted by ^a differ significantly below the .10 level using Mann-Whitney U tests
b -- pairs of means denoted by ^b differ significantly below the .10 level using Mann-Whitney U tests
c -- pairs of means denoted by ^c differ significantly below the .01 level using Mann-Whitney U tests
d -- pairs of means denoted by ^d differ significantly below the .05 level using Mann-Whitney U tests
e -- pairs of means denoted by ^e differ significantly below the .01 level using Mann-Whitney U tests

Amongst the two types of novices, the difference of strongest significance was *Help aspiring entrepreneur* where novices with no intention to invest were significantly higher [Mann-Whitney $U = .500$; $Z = -2.682$; $p = .007$]. Their inclination to rate this motive more highly than their first-time colleagues may be explained given their one-time status. Their motivations to help an entrepreneur may be the cause of their one-time status, such as helping a friend or family member, following which they have no intention to re-invest. On the other hand, habitual angels also rated helping an aspiring entrepreneur significantly higher than first-timers [Mann-Whitney $U = 29.000$; $Z = -2.897$; $p = .004$] with a mean motivational rating of 2.57 compared to the re-investing novices mean of .43. Given the extremes on either side of the first-timers, it is more likely that they are the anomaly rather than the one-timers or the habituals.

First-time novices rated *Challenge of new venture* significantly higher than habituals [Mann-Whitney $U = 45.000$; $Z = -2.081$; $p = .037$]. The notion of the spirit of the game and the challenges to overcome is apparently more motivating for first-timers (3.14) than for habituals (1.65) who rated five other motivations higher than *Challenge of new venture*. First-timers did not rate any other motive higher than *Challenge of new venture*.

One-time novices are less motivated by *Capital appreciation* (2.75) compared to habitual angels (3.79), a result which is weakly significant [Mann-Whitney $U = 28.500$; $Z = -1.687$; $p = .092$] and worthy of note due to the importance of capital appreciation in the selection of investments. Hypothesis 1 proposes that habitual angels will demonstrate more financial motives than novices on their first investment. There is weak support for Hypothesis 1. Habituals rated the motive *Idea looked like a winner* (3.93) weakly significantly more important than first-time novices (2.86) [Mann-Whitney $U = 58.500$; $Z = -1.703$; $p = .089$].

As a substitute for the documented objectives, policies and procedures of formal venture capital firms whose “motives” are their fiduciary obligations to the limited partners, business angels’ motives at the level of the first investment vary. Habituals differ from one-time angels in their motives regarding capital appreciation and helping entrepreneurs, and habituals differ from first-time angels in their concern for winners, helping aspiring entrepreneurs and the issue of being motivated by the challenge. The purely financially driven objective is unmistakably supplemented with other motives. In summary, the presence of greater concern for capital appreciation by habitual angels only provides weak support for Hypothesis 1 because there are no significant differences with regards to tax benefits and profits and dividends which would also be considered financial motivations.

6.2.2 Habitual Angels’ Subsequent Motivations

Angels were asked about their motivations for informal investing at the time of each of their first four investments. Investigating changes in investment motivations across a number of subsequent investments (obviously for habitual angels only) explores small shifts within individuals that may be precipitated by experience or learning effects. Changes in motivations from one investment to the next is reflected in Hypothesis 2 which proposes that angels’ financial motivations will increase with investment frequency.

The means for habitual angels’ initial and subsequent investment motivations are presented in Table 6-3. There is some small variation in rankings, but without exception, the top three motivators over the range of four successive investments are *Capital appreciation*, *Profits and dividends* and *Idea looked like a winner* with mean scores at or above 3.00 which denote an *Important consideration* or better. Habitual angels consistently rank *Create employment* and *Area economically depressed* last across the four investments with scores that indicate these two variables were *not a consideration at all* or *very little consideration*.

Table 6-3 - Habitual Angel Motivations for Initial Subsequent Investments

	1st Investment		2nd Investment		3rd Investment		4th Investment	
	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank
Idea Looked Like Winner	3.93	1	3.75	1	3.64	2	3.78	2
Capital Appreciation	3.79 ^a	2	3.61	2	3.93 ^a	1	4.44	1
Profits & Dividends	3.07	3	3.50	3	3.43	3	3.00	3
Help Aspiring Entrepreneur	2.57	4	2.44	4	1.93	6	1.22	7
Fun & Excitement	1.93	5	1.89	6	1.64	7	1.33	5
Challenge of New Venture	1.65 ^b	6	2.04	5	2.00 ^b	5	1.25	6
Tax Benefits	1.62	7	1.73	7	2.14	4	2.56	4
Create Employment	.89	8	1.00	8	1.38	8	1.00	8
Area Economically Depressed	.40	9	.32	9	.38	9	.38	9

Non-parametric Wilcoxon pairs tests were conducted on pairs of 1st and 3rd investments. The 3rd investment was selected instead of the 4th to ensure adequate numbers for testing.
a -- means denoted by ^a differ significantly below the .10 level in Wilcoxon pairs tests
b -- means denoted by ^b differ significantly below the .05 level in Wilcoxon pairs tests

Table 6-3 indicates which of the habitual angels’ motives experienced significant changes from the first to the third investments. Third investments were used, instead of fourth, to maximize the number of respondents since there were only seven four-time habitual angels responding. The ambition exhibited by creating new opportunities becomes increasingly important to habitual angels as the means for *Challenge of a new venture* significantly increased going from ranks of sixth to fifth [$Z = -2.032$; $p = .04$] although the mean for this motivation drops precipitously for the small number of fourth investments. It should be noted that although there is a significant increase, the means are still low indicating relative less importance. By the time they get to their fourth investment, multi-investing angels may be more concerned with challenges due to time constraints – possibly having to do with previous investment obligations.

Capital appreciation demonstrated weakly significant increases from the first to third investment [$Z = -1.633$; $p = .10$] by rising from second to first place in ranking of importance to habitual angels. Other motivations which may indicate financial concerns overall, such as *Tax benefits* and *Profits and dividends* fluctuate and are not significant. Thus, there is only weak support for Hypothesis 2 that proposes that the measure for angels' financial motivations will increase as the number of investment events increases. The traditional money-motivated concerns in the scale do not demonstrate overwhelming support that habitual angels come to learn through experience to prefer financial motives.

6.2.3 Principal Components Analysis

Since there are many variables in the analyses regarding motivations, it is expected that there may be relationships amongst them that render simple bi-variate tests insufficient. A multi-variate approach to analysis accommodates the effects of variable interdependence. When employing summated scales, such as the collection of motivations used here, principal components analysis (PCA) helps resolve the relationships between variables by producing a smaller number of components and reduces measurement error as well (Hair et al., 1998). In this sub-section, a Cronbach's alpha analysis measures the reliability of the various variables to ensure that the scales are internally consistent (Bryman & Cramer, 2001). Two variables were eliminated on the basis of the Cronbach's analysis, and the number of variables in the motivational scale was reduced to seven. When subjected to PCA, the seven motivations resulted in three meaningful components. The scores from the three components are used for means test to compare the various groups of novice and habitual angels.

Cronbach's alpha analyses were used to reduce the number of variables to a number sufficient for PCA. Cronbach's alpha analysis is a measure of internal reliability used for multiple-item scales (Bryman & Cramer, 2001), and was used here to ascertain the internal

consistency of some small groups of variables. Where the internal reliability of a particular motivation exceeded .60 when subjected to a Cronbach's alpha analysis, that item was considered to be internally consistent with the others in its group, and was therefore exempted from further analysis. Variables with internal reliability alphas of .60 or above are deemed acceptable for exploratory analyses (Robinson, Shaver, & Wrightsman, 1991) such as this study.

Two motivational variables were exempted from the PCA on the basis of the Cronbach's analysis. *Tax benefits* correlated with *Creating employment* and *Area economically depressed* (alpha of .624) and was, therefore, excluded from further analysis. This suggests that tax benefits, rather than being viewed as a monetary or financial motive, is perceived by angels as an alternate motive similar to investing for reasons of community benefit such as employment and business level economic development. This interpretation is in keeping with the previous analysis which showed *Tax benefits* as having low motivating values.

Capital appreciation correlated with *Idea looked like a winner* and *Profits and dividends* (alpha of .639) and so was also exempted from further analysis. Interestingly, *Idea looked like a winner* is the third variable in the collection of motives that appear to be dominated by financial concerns which further explains some of the earlier bi-variate findings where *Tax benefits* demonstrated low mean scores in the scale of motivations, and *Idea looked like a winner* scored very high.

Principle Components Analysis

The PCA needs to have "at least five times as many observations as there are variables to be analysed" as the minimum acceptable ratio of observations to variables (Hair, Anderson, Tatham, & Black, 1998 p. 98). The seven remaining motivations were subjected to a PCA which identifies underlying dimensions to produce a smaller number of components. The

objective of PCA is to reduce the number of variables to a minimum that explain the most variance (Bryman & Cramer, 2001). A number of tests were applied to assess the applicability of principle component analysis to the data set. A review of the communalities indicated large values which suggested that the data set was appropriate for PCA (Stewart, 1981). (Generally, patterns of low correlations indicated inappropriate data sets because PCA is a test of homogeneity.) The communalities are shown in Table 6-4. Two other measures for sampling appropriateness are Bartlett’s test of sphericity which is significant [Bartlett’s = 44.2; df = 21; $p = .002$], and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy which is .540. The KMO is low, however, though it is not meritorious, it is not unacceptable (Stewart, 1981). Values above .50 for the entire matrix are appropriate (Hair et al., 1998). The three methods suggest that there are enough intercorrelations amongst the variables to justify the use of PCA.

Table 6-4 - Variable Communalities (PCA)

	Initial	Extraction
Profits & Dividends	1.000	.766
Idea Looked Like Winner	1.000	.664
Create Employment	1.000	.774
Fun & Excitement	1.000	.744
Help Aspiring Entrepreneur	1.000	.762
Area Economically Depressed	1.000	.723
Challenge of New Venture	1.000	.484

Extraction Method: Principal Component Analysis.

When the PCA is conducted, a three-component solution explains 69.8 percent of the variation. The varimax component loadings are shown in Table 6-5. A component loading of $\pm .75$ is the suggested cutoff point for sample sizes of 50 or so (Hair et al., 1998) in order

for the variables to be significant²². Component loadings of $\pm .50$ or greater are practically significant since they represent approximately 25 percent of the variance accounted for by the component (Hair et al., 1998). Because of the relatively small sample size, this analysis leans towards the more strict guidelines to ensure significance of the variable loadings on components.

Table 6-5 – PCA Rotated Component Matrix for Motivations

	Components		
	1	2	3
	Community	Finance	Sporting
Profits & Dividends	.187	.814	.252
Idea Looked Like Winner	-.307	.738	.143
Create Employment	.860	.045	.174
Area Economically Depressed	.843	-.068	-.045
Challenge of New Venture	.312	.158	.597
Fun & Excitement	-.023	.282	.812
Help Aspiring Entrepreneur	-.364	-.526	.590
Tax Benefits			
Capital Appreciation			
Percent Variance Explained	28.6	24.2	17.1
Eigenvalue	2.00	1.69	1.20

The next step is to identify the component loadings, identify and interpret the components, and then assess their reliability using Cronbach’s analysis. The first two items appear in this sub-section, and the alpha analysis follows. The first component is heavily loaded with the economic and socially-oriented dimensions *Creating employment* and *Area economically depressed*. The combination of these two variables have a sense of social inspiration, and intent of social responsibility. These variables are more than acts of unselfishness intended to benefit another individual, as altruism would imply, since they are directed at social and

²² In order to produce a .05 level of significance, a power level of 80 percent, and standard errors assumed to be twice those of conventional correlation coefficients (Hair et al., 1998).

economic woes that are intended to benefit more than the entrepreneur. Indeed, *Help aspiring entrepreneur* did not only not load heavily on this component, but actually loaded negatively on the first component. This component is henceforth formally referred to as *Community Consciousness* instead of altruism as might be expected from other studies. This component has an eigenvalue of 2.000 and explains 28.567 percent of the variance.

Financially driven *Profits and dividends* and *Idea looked like winner* loaded heavily on the second component. The notion that they are selecting a winning investment for profits and dividends has a heavily financially oriented approach. Recall as well, that *Capital appreciation* was highly intercorrelated with these two variables earlier in the internal reliability analysis. This component is henceforth referred to as *Finance*. *Finance* has an eigenvalue of 1.692 and explains 24.166 percent of the variance.

The variables *Fun and excitement* and *Challenge of new venture* load heavily on the third component. *Challenge of a new venture* is not as large a component loading as some of the others, it weighs more heavily on the third component than either component 1 or 2. For this reason, the practical significance discussed earlier was adopted for this variable. The third component is challenging to classify as it has both a recreational and competitive quality to the combination of variables. The combination of these two suggests exhilarating, enthusiastic, and spirited investing -- with a hint of gamesmanship -- and is henceforth referred to as *Sporting*. *Sporting* has an eigenvalue of 1.196 and explains 17.079 percent of the variance.

The more stringent cut-off considered earlier has been applied quite straightforwardly because the component loadings (but one) are significant and load heavily on only one component. For variables to have high and significant component loadings on only one of the components (as is the case here) is a quality that is sought after but rarely achieved. Most

variables have several moderate loadings. “When each variable has only one loading on one component that is considered significant, the interpretation of the meaning of each component is simplified considerably” (Hair et al., 1998 p 113).

Helping aspiring entrepreneurs is the lone exception to the favourable analysis noted above.

Helping aspiring entrepreneurs loads almost equally on each of components 2 and 3 with component load scores of $-.526$ and $.590$. As the variable loads equally on two different components, the appropriate interpretation is that it does not weigh more heavily on one component or another. Thus, *Helping aspiring entrepreneur* is excluded from the interpretation since a variable with several high loadings should be deleted (Hair et al., 1998)²³.

Correlation Between and Within Components

Table 6-6 shows the amount of correlation within each of the three components noted in the PCA, as well as the amount of overlap between components. Cronbach’s alpha analyses of each of the components are shown on the diagonal and the Kendall’s tau are the off-diagonal figures²⁴. Optimally, it is desired to have higher figures on the diagonal (Cronbach’s reliability analyses results which demonstrate the association amongst the variables within a component) and low numbers on the off-diagonal (the amount of correlation between components).

²³ The PCA was run again after dropping the interpretation of the *Helping aspiring entrepreneur* variable in an effort to respecify the analysis. This did not improve the communalities, barely improved the KMO and test of sphericity, and did not help in the interpretation of the components.

²⁴ The Kendall’s tau is the equivalent to the Pearson’s moment correlation for use with non-normally distributed data.

Table 6-6 – Cronbach’s Reliability Alphas Within- and Kendall’s Tau Correlation Coefficients Between-Motivational Components

	Community Consciousness	Finance	Sporting
Community Consciousness	.7357*	-.024	.040
Finance		.5918*	-.038
Sport			.5025*

* When only two items are used in constructing a scale, Cronbach’s alpha is equivalent to the Pearson correlation between the two items (Tyebjee and Bruno, 1984).

The diagonals show that *Community Consciousness* and *Finance* are sufficiently high for exploratory analysis, however, the *Sporting* alpha is low. Stewart (1981) reviewed the relevant literature, and recommends selecting from more components, rather than fewer components, because it has “less severe consequences for the final solution” (p. 59). Serious distortions in the rotated solution result from too few components.

There is little correlation between the three components (the off-diagonal Kendall’s tau values in Table 6-6). Thus, there is reasonable within-component reliability, yet little correlation between the components, which is the desired effect of PCA.

Statistical Tests Using Component Scores

T-tests of the component scores for each respondent are used to test relevant hypotheses. The component means and t-tests for a variety of cohorts are displayed in

Table 6-7 on page 244. Novice angels exhibit negative tendencies for both the *Finance* motivations (-.169) compared to habituals who are mildly disposed towards *Finance*. The negative tendency of novices (-.169) is heavily weighted by one-time angels (-.494) because the samples’ first-time angels are more financially driven (.173) than habituals. Hypothesis 1 which proposes that habitual angels will have stronger financial motives than novices is

unsubstantiated statistically when a multi-variate PCA analysis is employed. The weakly supported bi-variate analysis does not stand the scrutiny of more rigorous multi-variate analysis.

Table 6-7 - Motivational Component Scores by Cohort

	One-Time Novices	First-Time Novices	All Novices	Habituals
Community Consciousness	.2769	.4151 ^b	.5288 ^c	-.2553 ^{bc}
Finance	-.4943	.1740	-.1689	.0815
Sporting	.6271 ^a	-.3672 ^a	-.0602	.0293

a – pairs of means denoted by ^a differ at a level of significance below .10 using t-tests
b – pairs of means denoted by ^b differ at a level of significance below .10 using t-tests
c – pairs of means denoted by ^c differ at a level of significance below .05 using t-tests

Novice and habitual angels differ significantly on *Community Consciousness* [$t = 2.564$; $df = 41$; $p = .014$] with novices inclined towards it (.529), and habituals disinclined towards it (-.255). When one-time novices are compared to first-time novices, first-timers tend to have higher means for *Community Consciousness* (.415 vs .277). First-timers are positively disposed to *Community Consciousness* (.415) whereas habituals are not (-.255), a finding which is weakly significant [$t = 1.924$; $df = 35$; $p = .062$].

Habitual angels component scores demonstrate barely perceptible, but positive, inclinations for *Sporting* (.029) and novices are mildly negative (-.060). Of novices, first-time angels are negatively disposed to *Sporting* (-.367) whereas one-time angels are positively motivated (.627), a difference which is weakly significant [$t = 1.911$; $df = 7.593$; $p = .094$].

Interestingly, the notion that first-time novices’ motivations may lie somewhere between those of one-time novices and habituals is an inaccurate assessment. For each of the three motivations, if the means of the component scores laid on a continuum, the first-time

novices' scores always lie on either side of the one-time novices or habituals – never between. In this sample, first-time novices' motivational dispositions are more extreme suggesting opportunities for further exploration. For example, whereas habituals are slightly disinclined towards *Community Consciousness* and one-time novices are slightly inclined to it, first-time habituals are even more inclined towards it. Likewise, one-time novices have a strong negative disposition to *Finance* and habituals have a slight predisposition towards it, but first-time novices have an even stronger disposition towards *Finance* than habituals²⁵. Lastly, where one-time novices are inclined towards *Sporting* and habituals are fairly neutral, first-time novices demonstrate strong negative associations with *Sporting*.

6.2.4 Summary and Discussion

Bi-variate and multi-variate analysis of nine motivations of habitual and novice angels produces the following observations:

Bi-Variate Analysis:

- One-time angels are significantly more likely to invest to help an aspiring entrepreneur than a first-time angel.
- On their first investment, habitual angels rate the motive of helping an aspiring entrepreneur significantly higher than first-time novices.
- First-time angels are significantly more motivated by the challenges posed by the investment than are habituals who place a number of other motives ahead of the challenge.
- There is weak evidence that habitual angels are more motivated by capital appreciation than one-time angels which tentatively supports Hypothesis 1.
- Regarding subsequent investments, habitual angels interests in the *Challenge of new venture* increase over time, but still remain largely unimportant as a motive overall.

²⁵ - Whereas these measurements are those of all cohorts on their first investment, these differences are not the result of values regressing to the mean.

- Regarding subsequent investments, there is weak support that habitual angels' *Capital appreciation* motivations increase reaching ratings of *Very Important* *Consideration* to *Extremely Important*. This is tentative support of Hypothesis 2.

PCA

- Three components are produced from a PCA– *Community Consciousness*, *Finance* and *Sporting*.
- Novices significantly differ from habituals on *Community Consciousness*. Novices are inclined towards it and habituals are disinclined towards it as a motive.
- One-time novices are weakly more positively inclined towards *Sporting* than first-time angels.

Hypothesis 1

The multi-variate analysis indicates an absence of any support for the hypotheses that habitual angels are more financially motivated than novice angels at the level of their first investment (Hypothesis 1). Weak support at the bi-variate level was not replicated in the multi-variate analysis. This suggests that more complex financial motivations are distributed rather more uniformly across the three types of investors than might have been expected. In fact, the motivations that most significantly differentiated habitual angels from novices are their dispositions towards *Community Consciousness*.

First-time angels are positively disposed to inclinations of *Community Consciousness* (a component comprised of employment creation, economic development and tax benefit motives) whereas habitual angels are negatively disposed to it. Novices' predilection to *Community Consciousness* highlights the non-financial motives that can dominate their decisions. Driven by concerns that represent socially beneficial, but potentially uneconomic, motives underlines the informational breach that characterises the novice compared to the

habitual. Investing on the basis of social benefits would be considered highly dangerous practice in neoclassical financial theory.

As non-professionals, novice and habitual angels are subjected to significant informational asymmetries than formal venture capitalists who are skilled, networked and paid to seek information, establish objectives and develop policies. Novice angels were observed to be more susceptible to social and economic development motives than their habitual counterparts. Although selecting investments on the basis of socially beneficial motivations may be thought to be an illogical practice, it does represent the objective functions of those individuals. If these are the motives that drive the individual, then they are valid. The fact that the socially oriented motivations may or may not offer good upside potential for successful exits is apparently irrelevant to them. Under these circumstances, habituals, at least, will have the benefit of making additional investments in years to come that may proffer upside potential to mitigate losses from earlier investments that failed to thrive.

The clear motivations to pick a winner and gain financially through capital appreciation, which rank first or second for every investment (in the bi-variate analysis) for habituals and novices, contrasts an argument proposed by Benjamin and Margulíš (1996) who indicate business angels are more concerned to avoid bad investments than to find winners. Means and rankings suggest that angels are interested in identifying up-side potential rather than employing informal private equity investments to produce a reasonable rate of return. This argument is reinforced by the tendency for angels to reduce their informal investment activities as they age since as amount of time left to cover losses runs out. They seek winners and are prepared to tolerate losses. Perhaps what angels *should* do is to avoid bad investments, but what they *do* is try to pick winners.

Two of the three components generated from the PCA are similar to those identified in other studies such as the earlier major Canadian study (Riding et al., 1993). Two of the factors produced from their study are very similar to this work, namely their *Financial* and *Affiliation* components which are similar Finance and Sporting here. Their motivational factor *Financial* was the first-ranked motivation with a mean near complete agreement. Their factor called *Affiliation*, the third ranked motivation, included some characteristics similar to this study's *Sporting* category such as "to be part of creating something ...sense of excitement ... participation with the individuals" (p. 33). Their study did not include any altruistic options and, therefore, component analysis would not have identified any underlying inclinations in that direction. A *Due Diligence/Comfort* factor focussed on "research ... understanding the nature of the business ... and previous experience" (p.33). Discrepancies between this and the Riding et al. (1993) study can be attributed to two reasons. Firstly, the results of this work were collected in a representative manner whereas the Riding et al. study was a sample of convenience. Secondly, the Canadian study's motives were more inclined towards reasons for investing in a specific opportunity (as opposed to a different opportunity) rather than motives for investing informally (as opposed to some other type of investing) which was the intention of this study.

A careful review of the Riding et al. (1993) study did not reveal the KMO measure of sampling adequacy for their study for comparison purposes. The KMO is a measure of sampling adequacy that quantifies "the degree of intercorrelations among the variables and the appropriateness of factor analysis" (Hair et al., 1998, p. 99). The low KMO here (not meritorious, but not unacceptable) suggests there are not enough intercorrelations for the component analysis to be entirely useful since too few intercorrelations signifies that the variables are complex and highly individualised. Visual inspection of the intercorrelations indicates that 19 percent of the intercorrelations were greater than .30. This observation

insinuates that there may be other motivations yet to be revealed by these enigmatic investors and that there is substantial work yet to be done to fully expose and understand them.

Previously, in an assessment of entrepreneuring and non-entrepreneuring angels, Sullivan (1991) found few significant differences between first and second most important reasons for informal investing. Comparing the significance of the results of these two studies indicates that re-investment behaviour (habitual behaviour) may be a more adequate criterion for angels' motivational heterogeneity than their entrepreneurial status. Future studies may consider using the number of investments as a criterion for differentiation in a linear model.

Hypothesis 2

Hypothesis 2 investigates changes in habituals' motivations over time – particularly their financial motivations. There is weak evidence that their interest in *Capital appreciation* increases over subsequent investments. (This hypothesis could not be addressed by a multi-variate analysis because of the smaller numbers of investments reported for second, third and fourth investments.) Habitual angels' interest in the *Challenge of a new venture* also increases significantly (albeit only reaching levels suggestive of *Very Little Consideration* to *Of Some Consideration*). Although only two of the motives selected show statistical evidence of varying with investment frequency, it indicates a proclivity to adapt, a behaviour suggestive of learning.

6.3 Deal Generation

The deal generation behaviours studied to date (Freear et al., 1992; Harr et al., 1988; Mason & Harrison, 1993a; Riding et al., 1993) indicate that angels tend to use referrals from business associates, family and friends as their sources for deals. Also, they make less use of industry informants than formal venture capitalists (Fiet, 1995a), thus perpetuating a tendency

for them to invest in sectors they know well (Van Osnabrugge, 1998a). The deal generation discussion revolves around the passive receipt of information from colleagues, to small numbers who pro-actively seek investments. Hypotheses 3 to 6, proposed in Chapter 4, will further refine our understanding of their activities.

This section considers the numbers of proposals reviewed and the scope and depth of passive and pro-active deal generation. It begins by examining the numbers of proposals reviewed by habitual and novice angels. This is followed by review of pro-active and passive deal generation behaviours. A PCA produces three components from the scale of behaviours and these are tested and compared between novice and habitual business angels. This section concludes with a summary of the findings.

6.3.1 Proposal Review

An exploratory analysis of deal generation behaviours begins with an assessment of the number of proposals that angels view. This sub-section first reviews the group as a whole, and then investigates the differences between novices and habitual on their first investment (delving into *ex ante* differences). The potential for learning is explored by looking at changes in habituals' proposal review experiences over four investments. Interesting observations arising from the data concluded this sub-section.

Group, Novice and Habitual Proposal Review

The range of investment proposals reviewed by angels show that it is broad ranging from 0 to 12 proposals for the first investment and 1 to 100 for the fourth investment. Table 6-8 highlights the means and ranges for the average investment proposals reviewed. Novices reviewed a mean of 2.7 proposals in the year they made their first investment and habitual angels were almost identical at 2.8 proposals reviewed that year. A mean of slightly more

than one proposal (1.17) was reviewed by one-time angels. First-time angels average 2.25 in the year of their investment.

Table 6-8 - Number of Proposals Reviewed in Year of the Investment

	First Investment				Second Investment	Third Investment	Fourth Investment
	One-Time	First-Time	Novice	Habitual	Habitual	Habitual	Habitual
N	3	6	11	27	27	13	9
Mean	1.17	2.25	2.73	2.78 ^{ab}	4.85	9.96 ^a	18.28 ^b
Median	1.00	2.00	2.00	2.00	3.00	4.00	4.00
Std. Deviation	1.258	.418	3.189	2.342	9.347	15.899	32.984
Minimum	0	2	0	0	0	1	1
Maximum	3	3	12	9	50	50	100

a, b – Wilcoxon two-way related samples test significant at the .10 level with outliers removed

Hypothesis 3 states that habitual angels will review more proposals than novices. Mann-Whitney nonparametric tests demonstrate that novice angels do not significantly differ from habituals. There is no support for Hypothesis 3 that the number of proposals viewed by habitual and novice angels differs significantly on the first investment. One is unable to discern habitual angels at the time of their first investment by the number of proposals they review.

Learning To Review More Proposals

Second-time to fourth-time investors report 4.85, 9.96 and 18.28 respectively in the year they made their investment. Third-time investors reported reviewing up to 50 proposals per annum and some of the fourth investors reported reviewing as many as 100 proposals. Clearly, some angels who go on to make a number of investments come to review many proposals whether by accident or design. There were a number of outliers in the first investment data which, when removed, produced weakly significant indications that habitual angels review more proposals as their investment frequency increases. With the outliers removed, habituals’ first

investments showed weak significance with their third investment [$Z = -1.724$; $p = .085$], and the habituals' first investment excluding outliers showed weak significance with their third [$Z = -1.703$; $p = .089$] and fourth investments [$Z = -1.625$; $p = .104$] (not shown). Reviewing more proposals may be a learned behaviour acquired with investment frequency, or it may be a confirmation that angels who conduct more appraisal continue to re-invest. It may also signify that habitual investors gain more access to proposals as their investment frequency increases.

Unusual Observations

A review of the frequency chart produced some interesting observations with regards to proposal review. As many as 39.4 percent of angels reported reviewing no other, or only one other, proposals in the same year as their first investment. In essence, these individuals – who are about to become angels -- are investing in the first proposal they see. Table 6-9 displays the number of angels who review 0 or one proposals in the year the investment was made. Sixty-seven (66.6) percent of the small number of one-time investors basically invested in the first proposal they saw that year. First-time novices are especially diligent. None of them reported reviewing zero or one proposals in the year they made their investment. Forty-six (45.8) percent of reported habituals conducted very little deal generation in the year of their first investment.

Table 6-9 - Reviewing Zero or One Business Proposals in Year of Investment

	First Investment			Second Investment	Third Investment	Fourth Investment
	One-Time Novice	First-Time Novice	Habitual	Habitual	Habitual	Habitual
N	3	6	24	27	13	9
% Reviewing 0 or 1	66.6	0	45.8	29.6	23.1	11.1

The number of habitual investors who report investing in the first proposal they see declines as the number of investments increases, declining steadily from the first to the fourth investment. However, the number of habitual angels who conduct very little proposal review on their second and third investments also seem like a large proportion of the sample.

The number of proposals reviewed asked *not* how many they review per year, but rather how many they reviewed in the year they made the investment. This allows for the interpretation that angels reviewed proposals in previous years, but were not motivated to act on them. It also raises the question of the length of the search process. If it is years, some angels may review three, four or five proposals during intervals between investments. On the other hand, it seems apparent that at least some angels are motivated to act on the only proposal viewed over a period of time, and that lengthy and active searches are not necessarily the norm.

6.3.2 Pro-Active and Passive Deal Generation Behaviours

To explore Hypothesis 4 to 6, a large number of possible deal generation behaviours were compiled which were partially composed of behaviours noted in the literature as well as a selection of others that may be part of an angel's repertoire. The list and its derivation is discussed in Section 5.4.3. The list was made deliberately broad to include categories that angels may not have thought important enough to warrant listing in an open-ended "other – please explain" category.

Angels' use specific deal generation behaviours are outlined in Table 6-10. The depth of search activities is the intensity with which a variable is used by all respondents (left side of Table 6-10), and the scope is the proportion, or percentage, of the population who make use of it (right side of Table 6-10) (Katila & Ahuja, 2002). Thus, the depth of deal generation

behaviours are represented by the mean in the first panel, and the scope is represented by the percentage of angels who engage in the behaviour in the second panel. Passive activities remain un-shaded. The left panel, *All Reports - Depth*, reports the number, means and standard deviations of all those responding to the relevant question. Thus, individuals who responded that they did not use a particular activity are included here. The right-hand panel, *Reports of Behaviour Use – Scope*, reports the number, means, and standard deviations of only those respondents who reported engaging in the activity. Shaded activities are those deemed to be pro-active in nature, as discussed in Chapter 4.

Regarding depth, angels pursue a variety of different methods to find deals and means range from 2.23 (*intermittently to occasionally - between 3 to 11 times per year*) and .05 (*almost never used*). Notably, the means for the top two deal generation activities are more than double the means of any other behaviour. Clearly, approaches by entrepreneurs and friends of entrepreneurs are most used by most respondents (means of 2.23 and 2.31) compared to all other methods of deal generation (means ranging from .95 to .05). Still keeping to the left-side panel, the next five categories are pro-active behaviours. Angels read newspapers and inquire of accountants, lawyers, colleagues, customers and suppliers with a view to finding opportunities that are all pro-active methods of deal generation. Inquiring of boards of trade and placing advertisements have very low means. The large number of very low means is explained by the fact that each angel makes use of only a few deal generation techniques. The zero-rating for all those who do not use a method causes the means for the entire sample to be very low. By simple observation alone, one can ascertain that business angels do engage in pro-active methods of deal generation.

Table 6-10 – Scope and Depth of Deal Generation Behaviours for the First Investment

	All Reports – Depth			Reported Use of Behaviour – Scope			
	N	Mean	Std. Dev.	N	%	Mean	Std. Dev.
Approached by Entrepreneur	39	2.23	1.724	29	74.4	3.00	1.282
Approached by Friend of Entrepreneur	39	2.31	1.852	28	71.8	3.21	1.343
Approached by Acquaintance of Entrepreneur	40	.95	1.339	17	42.5	2.24	1.147
Inquired of Accountant	40	.83	1.083	16	40.0	2.06	.574
Inquired of Colleagues	39	.82	1.233	15	38.5	2.13	1.060
Read Newspaper Listings	40	.75	1.354	13	32.5	2.31	1.437
Inquired of Customers	39	.67	1.402	9	23.1	2.89	1.453
Joined Investing Group	39	.62	1.350	8	20.5	3.00	1.309
Approached by Family Member	39	.59	1.428	8	20.5	2.88	1.885
Approached by Intermediary	39	.51	.970	10	25.6	2.00	.816
Inquired of Suppliers	39	.44	1.046	7	17.9	2.43	1.134
Inquired of Lawyer	40	.35	.770	8	20.0	1.75	.707
Inquired of Neighbours/Community	38	.34	.708	8	21.1	1.63	.518
Overheard Colleagues	32	.19	.780	2	6.3	3.00	1.414
Inquired of Board of Trade	39	.15	.587	3	7.7	2.00	1.000
Placed Advertisement	39	.10	.447	2	5.1	2.00	.000
Joined Business Introduction Service	39	.05	.320	1	2.6	2.00	

- 0 Never used
- 1 Rarely used (once or twice a year)
- 2 Used intermittently (3-5 times a year)
- 3 Occasionally used (6-11 times per year)
- 4 Regularly used (monthly)
- 5 Frequently used (weekly)
- Shaded rows are pro-active behaviours; non-shaded cells are passive behaviours

The right-hand panel of Table 6-10, *Reported Use of Behaviour- Scope*, shows the means for only those respondents who reported actually using a behaviour. Thus, scope is a better depiction of the value of each method to those who use them. This provides a better depiction of the various deal generation activities in which business angels engage because

these means omit angels who do not make use of a stated technique. Again, the scope of deal generation behaviours is dominated by the actions of entrepreneurs and their friends and associates. *Approached by entrepreneur*, *Approached by friend of entrepreneur*, and *Approached by acquaintance of entrepreneur* were used by 74.4, 71.8 and 42.5 percent of angels respectively. More pro-active methods of deal generation, such as inquiring of accountants, colleagues and reading newspaper listings were only used by 40, 38.5 and 32.5 percent of angels respectively. Staying with the right-hand panel of Table 6-10, the means display a different order of importance. *Approached by friend of entrepreneur*, *Approached by entrepreneur* and *Approached by acquaintance of entrepreneur* were employed by large proportions of the sample. The pro-active behaviours of *Inquired of accountant*, *Inquired of colleagues*, *Read newspaper listings*, *Inquired of customers*, and *Joined an investing group* were the next most popularly used methods by 40 to 20.5 percent of the sample.

6.3.3 Novice and Habitual Deal Generation

In an effort to compare the pro-active and passive data for novice and habitual business angels, a number of metrics were created. First, the *frequency of use* measure (0 – 5) of each respondent’s pro-active (and passive) deal generation behaviours was totalled and each total was weighted to account for the greater number of pro-active variables (10) than passive variables (seven). These reflect the depth of use of each category and are reflected in the categories *Pro-active* and *Passive* below in Table 6-11. In addition, the scope of all pro-active (and passive) activities was measured simply summing the number of different deal generation techniques used by each respondent. The results of this summary are presented in the bottom panel in Table 6-11.

Table 6-11 –Depth of Pro-active and Passive Deal Generation and Scope

	First Investment			Second Investment	Third Investment	Fourth Investment
	One-Time Novices	First-Time Novice	Habituals			
Pro-active N	4	8	27	27	13	8
Mean	0 ^{dg}	62.13 ^g	33.19 ^{abd}	29.04 ^{abc}	36.08 ^{abc}	41.13 ^{ac}
Std. Dev.	0	57.898	36.918	35.359	48.820	58.379
Passive N	4	8	28	28	14	7
Mean	40.00	65.00	70.71	70.71	62.86	58.57
Std. Dev.	52.281	40.708	42.768	41.805	40.654	31.320
Scope N	4	8	27	28	14	9
Mean	1.50 ^{ef}	6.13 ^f	4.81 ^e	4.36	4.00	3.89
Std. Dev.	1.732	2.800	3.138	3.358	3.211	2.571

a – 4-way Friedman related samples test $p < .10$
b – 3-way Friedman related samples test $p < .10$
c – 3-way Friedman related samples test $p < .05$
d, e, f – Mann-Whitney U test $p < .05$
g – Mann-Whitney U test $p < .10$

Pro-active

The small number of one-time angels conducted no pro-active deal generation (0.0) whereas their first-time colleagues conducted a weakly significantly greater rate of pro-active activities (62.13) [Mann-Whitney U = 6.000; Z = -1.898; $p = .058$]. On their first investment, habituals conducted a measure of 33.19 deal generation activities which differs significantly from one-time investors [Mann-Whitney U = 18.00; Z = -2.206; $p = .027$]. Hypothesis 4 states that habitual angels will conduct more pro-active deal generation activities than novices. Habitual angels demonstrate significantly more pro-active activity than one-time novices. This is not the case first-time novices, however, which suggests the intention to re-invest may have something to do with the level of deal generation activity.

On subsequent investments, habitual angels pro-active measures show weakly significant differences across the four investments [4-way Friedman $X^2 = 7.098$; $df = 3$; $p = .069$]. However, on their second, third and fourth investments, habitual angels’ pro-active activities increase significantly [3-way Friedman $X^2 = 6.706$; $df = 2$; $p = .035$]. The dip on the second

investment and subsequent significant increase suggests a learning effect for pro-active deal generation that may be related to reducing informational asymmetries.

Passive

With regards to the passive measures (Table 6-11), one-time angels had a passive measure of 40.0 and first-time angels rated 65.0. Habituals had a passive measurement of 70.71.

Hypothesis 5 suggests that habitual angels engage in more passive behaviours than novices. This is demonstrated in the sample, but chance cannot be ruled out as the cause. Thus, there is no statistical support for Hypothesis 5.

Interestingly, in this sample, the means for habitual angels' passivity decreases with investment frequency from 70.7 to 58.6 [Wilcoxon signed ranks test; $Z = -.535$; $p = .593$].

None of the two-, three- and four-way tests results indicate significant differences. Declining receptivity to passive methods as investment frequency increases is contrary to intuition as it is expected that passive methods would become more prevalent as angels' status becomes known in a community. However, the observed phenomena may occur if angels make concerted efforts to "invisibility" as they become more recognised.

Scope

Hypothesis 6 proposes that, in total, habitual angels conduct a greater range of deal generation activities than novice angels. The bottom panel of Table 6-11 is a metric that reflects the total number of different types of deal generation activities engaged in by business angels. Clear and significant differences are observed at the level of the first investment. One-time angels engage in an average of 1.5 different deal generation techniques which is significantly different than their first-time counterparts who engage in a mean of 6.13 different deal generation activities [Mann-Whitney U = 3.000; $Z = -2.235$; $p = .025$]. Habituals, who conduct a mean of 4.81 different types of activities are also significantly more

than one-time angels [Mann-Whitney $U = 21.000$; $Z = -1.962$; $p = .050$]. There are no statistically significant differences between the means of first-time angels and habituals' first investment. We can, therefore, it can be said that Hypothesis 6 is statistically supported as it relates to one-time angels, but not for first-time angels.

Habitual investors show a decline in the scope of deal generation activities from their first to fourth investments from 4.8 to 3.9. None of the Wilcoxon two-, nor Friedman three- and four-way nonparametric related samples tests were significant. The decline in scope may be due to the greater decrease in passive behaviours than the increase in pro-active behaviours.

6.3.4 Principal Components Analysis

The concept of deal generation has been addressed thus far based on the elementary dimensions of passivity and pro-activeness derived from the literature. However, it is possible that more complex dimensions define the concept of deal generation. Variables making up the list of deal generation behaviours may not be independent, so multi-variate analysis was used to identify other possible dimensions underlying the data. Cronbach's reliability analysis was applied to the list of deal generation activities to reduce the number of variables. Then, PCA using varimax rotation was conducted to identify whether patterns existed amongst the variables and to reduce the number of variables for use in later multi-variate analyses. The new components produced were tested against the hypotheses discussed earlier.

Reliability Analysis

Deal generation behaviours that were used by very few respondents were excluded from the analysis (left panel of Table 6-10) to reduce the large number of deal generation variables overall. Variables eliminated on this basis were *Joined business introduction service*, *Placed*

advertisement, Inquired of board of trade, and Overheard colleagues since only one, two, three and two respondents respectively reported using these deal generation techniques at all.

The remaining variables were further reduced by first considering *a-priori* which were likely to group together and subjecting them to a Cronbach's reliability analysis. The reliability analysis rates the intercorrelations of a number of variables and then points those variables that can be excluded from the scale because they are highly correlated with the group, thus reducing the remaining number of variables overall for the later PCA. Cronbach's alpha analysis confirmed the reliability of the pro-active scale ($\alpha = .7836$). The reliability analysis of the passive scale ($\alpha = .4887$) did not meet the minimum expected alpha's of .6 which is considered acceptable for exploratory research (Robinson et al., 1991) suggesting there are other underlying dimensions amongst the variables that make up the passive scale and further reducing their numbers is discouraged.

A summary of the reliability analyses are shown in Table 6-12. Variables that were reduced due to high inter-item correlations are noted, as well as the variables with which they were correlated, and their associated alphas. The variables reduced on this basis were *Read newspaper listings, Inquired of accountant, Inquired of lawyer, Inquired of colleagues, and Inquired of neighbours and community*. As previously noted, these are all pro-active items which had a high group inter-item correlation. The right column shows the variables remaining in the analysis for the PCA. The variables from the pro-active scale that remained were *Inquired of suppliers, Inquired of customers* and *Joined investing group*. The four variables from the passive scale -- *Approached by entrepreneur, Approached by friend of entrepreneur, Approached by intermediary* and *Approached by acquaintance of entrepreneur* -- had alphas indicating they were not highly inter-correlated warranting their retention in the remaining analysis.

Table 6-12 - Deal Generation Alpha Analysis

	Exempted from Further Analysis		Remain for Future Analysis
	Highly Correlated With	Exempted Based on Alpha of	
a. Read Newspaper Listings	b, c	.647	√
b. Inquired of Lawyer	c, e, i, j	.700	
c. Inquired of Accountant	a, i, j	.748	
d. Joined Investing Group			
e. Inquired of Colleagues	i, j	.626	
f. Inquired of Neighbours & Community	i, j	.759	
g. Joined Business Introduction Service***			
h. Inquired of Board of Trade ***			
i. Inquired of Suppliers			√
j. Inquired of Customers			√
k. Placed Advertisement ***			
l. Approached by Entrepreneur			√
m. Approached by Friend of Entrepreneur			√
n. Approached by Intermediary			√
o. Approached by Family Member	l, m	.695	
p. Approached by Acquaintance of Entrepreneur			√
q. Overheard Colleagues ***			

*** Excluded from remaining analyses due to low number of respondents engaging in these behaviours.

Principal Components Analysis

The seven remaining deal generation variables were subjected to a PCA similar to that outlined in Section 6.2.3. The seven variables permit a PCA allowing a minimum of five responses per variable as advocated by Gorsuch (1983). The sample size does not meet Gorsuch’s minimum recommendation of 100 for the entire sample, but it is sufficient to at least describe the relationships amongst the variables, if not describe a predictive variate.

Table 6-13 - Rotated Component Matrix for Deal Generation

	Component		
	1	2	3
	Active Seeker	Sought After	Go-Between
Inquired of Suppliers	.897	-.075	.292
Inquired of Customers	.953	-.058	-.089
Approached by Entrepreneur	-.081	.894	-.016
Approached by Friend of Entrepreneur	-.040	.857	.0578
Approached by Intermediary	.194	-.160	.616
Approached by Acquaintance of Entrepreneur	-.124	.015	.780
Joined Investing Group	.129	.220	.714
Percent Variance Explained	29.3	24.2	17.9
Eigenvalues	2.052	1.694	1.256

The component analysis produced three components shown in Table 6-13. The KMO for the component analysis is .476. Bartlett’s test of sphericity is significant at the .01 level. This is slightly below that which is considered the guideline for acceptable levels of KMO (Hair et al., 1998). The slightly low KMO is acknowledged but permitted here for three reasons. Firstly, a visual inspection of the correlational matrix shows that 45 percent of the correlations are greater than .3. This is a general test of the suitability of using PCA. Second, the variable loading per component (Table 6-13) are high and significant (using the same guidelines as from Table 6-5). Thirdly, the quantifications for some rule are guidelines and should not be taken literally in light of other extenuating circumstance such as those already noted. The low number of responses may be the cause of the low KMO, rather than the inappropriateness of the method.

The next step is to identify the component loadings, identify and interpret the components, and assess their reliability using Cronbach’s analysyis. Each variable loaded heavily on one of three components. This is a highly desirable quality for PCA interpretation (Hair et al.,

1998). Active inquiries made of trade partners, such as suppliers and customers, load heavily on the first component produced in the analysis and explains 29.3% of the variance. Both variables loading on the component are pro-active deal generation behaviours by angels investigating their industry or channel. This group is, henceforth, referred to as *Active Seekers*. The second component is heavily weighted by the approaches made by entrepreneurs and the entrepreneurs' friends and explains 24.2 percent of the variance. The two variables loading heavily on the second component are both passive activities *Approached by entrepreneur* and *Approached by friend of entrepreneur* that would be more generally referred to as cold calls or unsolicited proposals. These together form the component now referred to as *Sought After*.

The third component is harder to define as it includes activities that are passive (*Approached by intermediary* and *Approached by acquaintance of entrepreneur*) and pro-active (*Joined an investing group*). All three, however, represent a type of intervention whether by a group (*Joined an investing group*), or an individual (*Approached by acquaintance of entrepreneur* or *Approached by intermediary*). These are not necessarily paid interventions and it is not known whether the intervener is known by the angel. The variable loadings on the third component explain 17.9 percent of the variance. This component is henceforth referred to as *Go-Between* which reflects the nature of an intervention, but not necessarily a formal nor friendly intermediary, and not necessarily a pro-active nor passive act. The PCA is confirmatory in that it reinforces three dimensions which are supported theoretically and in the literature, and it is exploratory in that it has highlighted dimensions of the third component that were not previously highlighted considered. In future discussions of passive deal generation activities, some references are made to *Sought After* (which is clearly a passive activity) and *Go-Between* (which is not clearly a passive activity though it embodies elements of passivity).

Correlation Between and Within Components

In Table 6-14, the measure on the diagonal outline the Cronbach’s reliability alpha for the combination of variables in each of the components noted above. The reliability analysis scores for the three components are encouragingly high, although the coefficient for *Go-between* is lower than the others. The off-diagonal values in Table 6-14 are the Kendall’s tau correlation coefficients between the various components. The low values indicate that there is little correlation between the components -- which is desirable – effectively reducing the amount of overlap. The measures show there is little correlation between *Sought After* and *Active Seekers* (-.176), and *Go-Between* and *Active Seekers* (-.239). The correlation between *Go-Between* and *Sought After* (-.037) is not significant. Thus, there is good evidence that there is good correlation within each component and not much overlap between components.

Table 6-14 - Cronbach's Alpha Within- and Kendall's Tau Correlation Coefficients Between- PCA Deal Generation Components

	Active Seekers	Sought After	Go-Between
Active Seekers	.8466!	.176*	-.239**
Sought After		.7339!	-.037
Go-Between			.5506

* Significant at the .10 level
** Significant at the .05 level
! When only two items are used in constructing a scale the Cronbach alpha is equivalent to the Pearson product moment correlation (Tyebjee and Bruno, 1984).

Statistical Tests Using Component Scores

Table 6-15 shows the scores for the three deal generation components for the three types of angels identified. These were subjected to means t-tests in order to compare the activities of the various cohorts of angels. First-time novices have a positive inclination to pro-activity (.702), whereas one-time novices have a negative mean (-.480) with regards to *Active*

Seekers. The difference is weakly significant [$t = -1.911$; $df = 7.593$; $p = .094$]. Habituals also have a mildly negative disposition (-.093) to *Active Seeker*. The PCA partially supports Hypothesis 4, which suggests that habituals engage in more pro-active deal generation activities than novices, because first-time novices are potential future habitual angels due to their intention to re-invest.

In this sample, one-time novices are more disinclined to *Sought After* activities (-.501) than first-time novices (-.111) whose mean is negative as well. Habituals are positively inclined to *Sought After* deal generation activities (.177). Hypothesis 5 suggests that habitual angels are more passively inclined than novices. Though the signs are in the appropriate direction, the differences are not significant in the PCA.

Table 6-15 – Deal Generation Component Score Means by Cohort

	One-Time Novices	First-Time Novices	All Novices	Habituals
Active Seeker	-.4800440 ^a	.7022209 ^a	.1934082	-.0931957
Sought After	-.5016351	-.1113931	-.3472107	.1676190
Go-between	-.1822619	-.0217966	-.1276213	.0616103

a – pairs of means denoted with ^a differ to a level of significance below .10 using t-tests

In this sample, both one-time angels (-.182) and first-time novices (-.022) are both disinclined to *Go-Between* activities whereas habitual angels are mildly disposed to such interventions (.062).

6.3.5 Summary and Discussion

The analysis in the preceding sub-sections attempts to uncover the nature and underlying dimensions associated with the deal generation and search behaviours of novice and habitual

angels, at the level of their first investment and over a period of time and investment events.

A summary of findings are as follows:

Bi-variate Analysis:

- The number of proposals viewed by habitual and novice angels on the first investment does not differ significantly and lends no support to Hypothesis 3.
- There is weak support that angels review more proposals with investment frequency which suggests a learning effect.
- A large proportion of angels invest in the first investment they review. The proportion of angels who do this declines with investment frequency.
- Whether reviewing the scope or depth of business angels' deal generation activities, approaches by entrepreneurs, their friends and acquaintances dominate the deal generation landscape.
- Bi-variate analysis indicates that habitual angels conduct significantly more pro-active deal generation than one-time business angels supporting Hypothesis 4.
- Habitual angels engage in significantly more pro-active deal generation from the 2nd to 4th investments suggesting angels learn about pro-active deal generation with investment frequency.
- Habitual angels conduct significantly more deal generation activities in total than do one-time angels which supports Hypothesis 6. (First-time angels also conduct significantly more deal generation activities in total than do one-time angels.)

PCA:

- The PCA identified three types of deal generation (rather than passive and pro-active): deals sought by angels, angels sought by entrepreneurs and their friends, and deals generated by intermediaries, clubs and acquaintances.

- First-time angels are weakly significantly more active seeking than one-time angels who are negatively disposed to active seeking. To the extent that first-time angels indicate future habituals, this lends weak support to Hypothesis 4.
- There is no support from the bi-variate or multi-variate analysis that habitual angels conduct more passive activities than novices.

Hypothesis 3

At the level of the first investment, the disposition to habitual behaviour is not obvious by the number of proposals reviewed. There is no statistical evidence that habitual angels differ from novices in the critical information asymmetry-reducing activity of reviewing more proposals. Thus, hypothesis 3 is not supported.

A serendipitous finding was the large number of novice and habitual angels who invest with little or no search for other deals. This reinforces the non-professional nature of their activities. Because they looked at no other deals, they must have been uniquely touched by the circumstances surrounding the investment. These angels' investment activities may have been precipitated by a specific deal, an opportunistic entrepreneur, or the influence of a specific colleague. Furthermore, investment frequency does not necessarily increase the number of proposals reviewed by some individuals. As time passes and investment events increase, some habitual angels still continue to invest in the first or second investment identified. This supports Van Osnabrugge and Robinson (2000) who pointed out that many investors confided that the project they had funded was the first one they had considered. The pursuit of these cohorts has received little attention. The small pool of opportunities that results from their limited search further reinforces the informational disadvantage of business angels relative to formal venture capitalists and would seriously hamper their overall appraisal attributes.

PCA of angels' deal generation behaviours indicate that the passive and pro-active framework does not sufficiently recognise underlying dimensions in the scale of deal generation behaviours because three categories of deal generation emerged from the PCA. The PCA produced a clearly pro-active group (*Active Seekers*), and two passive groups (*Sought After* and *Go-between*). (An active element of *Go-between*, *Joining an investment club*, may be passive in reality – for example, by handing over responsibility for finding deals to a group similar to a BAN). The presence of the third category provides grounds for more multi-variate research to avoid simplistic categorisations that do not truly represent the deal generation methods. The emergence of the third component in the PCA (loosely related to intermediary-informant) confirms and further adds to Sullivan's (1991) earlier work which indicates that angels prefer to "welcome investment leads from others" (independent investors) rather than "search for opportunities" (lead investors) (p. 462). It also coincides with dimensions that appear in formal venture capital (Tyebjee & Bruno, 1984).

Entrepreneurs also share a similar perspective. Half of the presidents in a sample of software entrepreneurs preferred non-systematic and passive opportunity identification search processes (Teach, Schwartz, & Tarpley, 1989) whereby opportunities are identified as they emerge rather than being sought.

Hypothesis 4

A small number of studies, however, have noted the use of some pro-activity by business angels (Harrison & Mason, 1992; Riding et al., 1993). The review of the scope (range of different activities) and depth (frequency of use) of pro-active deal generation behaviours indicates that angels do indeed make use of pro-active search behaviours. In particular, they inquire of accountants, colleagues, and making a point of reading newspaper listings (reported by 40, 38.5 and 32.5 percent of the respondents respectively). It is not clear whether these angels are those that are unhappy with the number and quality of proposals

referred to them (Harrison et al., 1997; Riding et al., 1993), but it is clear that many angels are pro-active.

In the bi-variate analysis, one-time and habitual angels differed significantly regarding pro-active behaviours. Weak differences were noted in the *Active Seeker* between first-time novices (who were disposed to it) and one-time novices (who were not disposed to it). Furthermore, the PCA indicated that first-time angels conduct significantly more pro-active activities than one-time angels at the level of their first investment. Thus, there is support from a variety of analyses that suggest that habitual angels conduct more pro-active deal generation than novices at the level of their first investment (hypothesis 4). It may be possible to ascertain future habitual intentions by the amount of pro-active search engaged in by the new business angel.

The indications of significance regarding novices and habituals pro-active behaviour in the bi-variate and PCA is in general agreement with that proposed by Benjamin and Marguelis (1996) who describe a very active role for angels:

Generating deal flow amounts to much more: offering services for free; serving as mentors to entrepreneurs; convincing colleagues to offer services free; publishing newsletters; contributing articles; volunteering to speak – either alone or on a panel; joining venture capital clubs; helping to place senior executive job seekers; referring accountants and attorneys to entrepreneurs; sponsoring or hosting seminars; teaching evening courses at a university; volunteering for advisory boards; publishing a book or audiocassette on the subject of raising capital; sharing good deals with co-investors; attending meetings of private investor networking groups; listing yourself in capital resources directories read by entrepreneurs; and subscribing to publications and networks that list investment opportunities (p.176).

Hypothesis 5

The overall tenor of the literature to date characterises angels as passive recipients of possible deals from colleagues and professionals such as lawyers, accountants and colleagues and who studiously avoid solicitations by feigning invisibility. The bi-variate analysis is characterised

by the pro-active/passive framework, however the PCA identified three components: one pro-active (*Active Seekers*) and two largely passive ones representing approaches by entrepreneurs (*Actively Sought*) and approaches by intermediaries/informants (*Go-between*). There are no significant differences regarding informant/intermediary activities indicated by the bi-variate and PCA.

Hypothesis 6

With regards to the variety of different deal generation activities, habitual angels engage in significantly more different deal generation activities than one-time angels (support for Hypothesis 6) and first-time angels were also observed to conduct more total activities than one-time angels. The bi-variate analysis indicated that first-time angels and habituals differ from one-time angels in their intention to re-invest suggesting that there are inherent differences between those who do and who intend to re-invest, and those who do not. The repertoire of deal generation activities for habitual and first-time angels is more vast than that of one-time novices.

The ability to predict future re-investment potential may be read by the total number of deal generation activities engaged in while searching for the first investment. The reception to active and passive methods would provide the most relief from information asymmetry.

These findings follow on from Kelly and Hay (2000) who were unable to identify significant differences as to whether habitual angels used focussed search processes (fewer activities) than less active investors, or broader search processes (more activities) than less active investors. In this case, habituals and first-time angels used broader search processes than one-time angels. Furthermore, this work refutes their assertion that there is a tendency for the 'least active group' (novices) to rely more on their own efforts (pro-active activities) than

three-time investing angels (habitual angels here). In this work, habituals and first-timers were both more inclined to pro-active engagement on the first (and subsequent) investments.

Approaches by Entrepreneurs

In the bi-variate analysis, passive deal generation related to entrepreneurial approaches occupied the top three categories for both scope and depth of deal generation. Lionaise and Johnstone (2000) found similar successful angel search behaviours which were focussed on the entrepreneurs' actions in a study covering one sector of the geographic region covered by this study. A tacit condition necessary for effective lubrication of the deal generation market may require that angels remain receptive to entrepreneurs' and intermediated advances.

Angels who desire invisibility may be thwarting the process which would introduce them to the most capable entrepreneurs. Adverse selection may be reduced by angels' receptivity to the advances from capable entrepreneurs. The signalling effects suggested by entrepreneurs - for whom finding angels is a threshold over which they must jump - presents the potential for interesting theoretical arguments and research opportunities.

Entrepreneurs are very active in locating angels as well as engaging their friends and acquaintances on their behalf. Evidence from the entrepreneurship literature supports the importance of the entrepreneurs' approach. Software entrepreneurs indicate that their networking and active search behaviours produce more business finance allies than soliciting professionals such as attorneys, bankers, and accountants (Freear et al., 1995b). Social capital (Nahapiet & Goshal, 1998) and social competence (Spence, Donovan, & Brechman-Toussaint, 1999) are now recognised as indicators of entrepreneurial success as measured by income (Baron & Markman, 2003). Using their networks to identify angels (social capital), and subsequently successfully wooing angels (social competence), may be threshold activities which entrepreneurs must overcome to demonstrate their better-than-average entrepreneurial abilities.

However, the later PCA finding that habituals are not significantly different in the *Actively Sought* component than novices suggests that angels' efforts to reduce unwanted solicitations (to so-called "invisibility" issue) serves them well. Habitual angels do not differ significantly from novices in this regard.

Learning

The weak evidence that habitual angels review more proposals given investment frequency suggests learning. In addition, the dip on the second investment, and subsequent significant increase in pro-active search for investments numbered three and four suggests a learning effect for pro-active deal generation that may be related to reducing asymmetries. Angels benefit by behaviours which could be expected to improve performance in the long run when their search causes the location of projects that are suited their knowledge, industry and skill.

6.4 Cognition

Cognition is important in the appraisal process because different angels will review the same business plan and interpret the information differently. To the extent that different angels cognate in a manner that ultimately results in different decisions, cognition is important to understanding angel behaviour. The information-related elements of cognition were discussed in Section 3.4.3. This section of the results tests the hypothesis 7 and 8 which were developed in Section 4.2.3 and proceeds by first considering the presence of representativeness in the population and then the differences present in novice and habitual angels. The overconfidence measure is then explained in detail and tested against the various cohorts. This section concludes with a summary and discussion of the findings.

6.4.1 Representativeness

Two-thirds of the sample respondents responded with at least one incident of representativeness reasoning for the two representativeness questions. Hypothesis 7 asserts that novices manifest the representativeness heuristic more than habitual angels. The presence of two representativeness scenarios facilitated the production of a metric of at least ordinal proportions by adding the number of representative responses (Busenitz & Barney, 1997). Two statistical reasoning examples (0,0) sum to zero and two heuristic responses total two (1,1). A larger number implies more representativeness reasoning. The means for these sums are presented in Table 6-16. There is weak support that novices are significantly different than habituals as regards the use of representativeness [Mann-Whitney $U = 73.000$; $Z = -1.761$; $p = .078$]. The source of the difference is attributed to one-time novices who have a representativeness reasoning mean of 1.75 compared to habitual angels mean of 0.88 [Mann-Whitney $U = 22.00$; $Z = -1.940$; $p = .052$]. First-time novices have a representativeness mean between the two at 1.20. Thus, in this exploratory study, there is support that one-time novices utilise the representativeness heuristic more than habitual angels (Hypothesis 7). In this sample, portfolio angels make use of representativeness the least.

Table 6-16 –Representativeness Means and Tests by Cohort

	N	Mean	Std. Deviation
Novice	9	1.44 ^b	.726
One-time Novice	4	1.75 ^a	.500
First Time Novice	5	1.20	.837
Habitual	26	.88 ^{ab}	.816
Serial	7	1.00	1.000
Portfolio	19	.63	.496

a – means denoted by ^a differ from one another at a significance level below .05 using Mann-Whitney U tests
b – means denoted by ^b differ from one another at a significance level below .10 using Mann-Whitney U tests

6.4.2 Overconfidence

Overconfidence exists when a respondent’s confidence assessment exceeds the average of all persons’ assessments of a particular category. For example, respondents who were 100 percent sure their answer was correct were considered overconfident if only 80 percent of the respondents (in the *100 percent sure* category) answered correctly. Alternatively, a respondent is under-confident if 90 percent of the respondents in the *60 – 69 percent sure* category actually answered correctly. This measure of overconfidence is “the oldest and simplest measure of overconfidence ... (that) provides a valid criterion for diagnosing over/underconfidence that does not depend on the mode of analysis” (Brenner, Liberman & Tversky, 1996).

Table 6-17 - Accuracy of Estimation of Response Correctness

	Estimation of Accuracy of General Knowledge Question					
	50 - 59% sure	60 - 69% sure	70 - 79% sure	80 - 89% sure	90 - 99% sure	100% sure
Correct Answer	33.3%	75.0%	0.0%	84.6%	100.0%	81.8%
Total	9	4	1	13	5	11

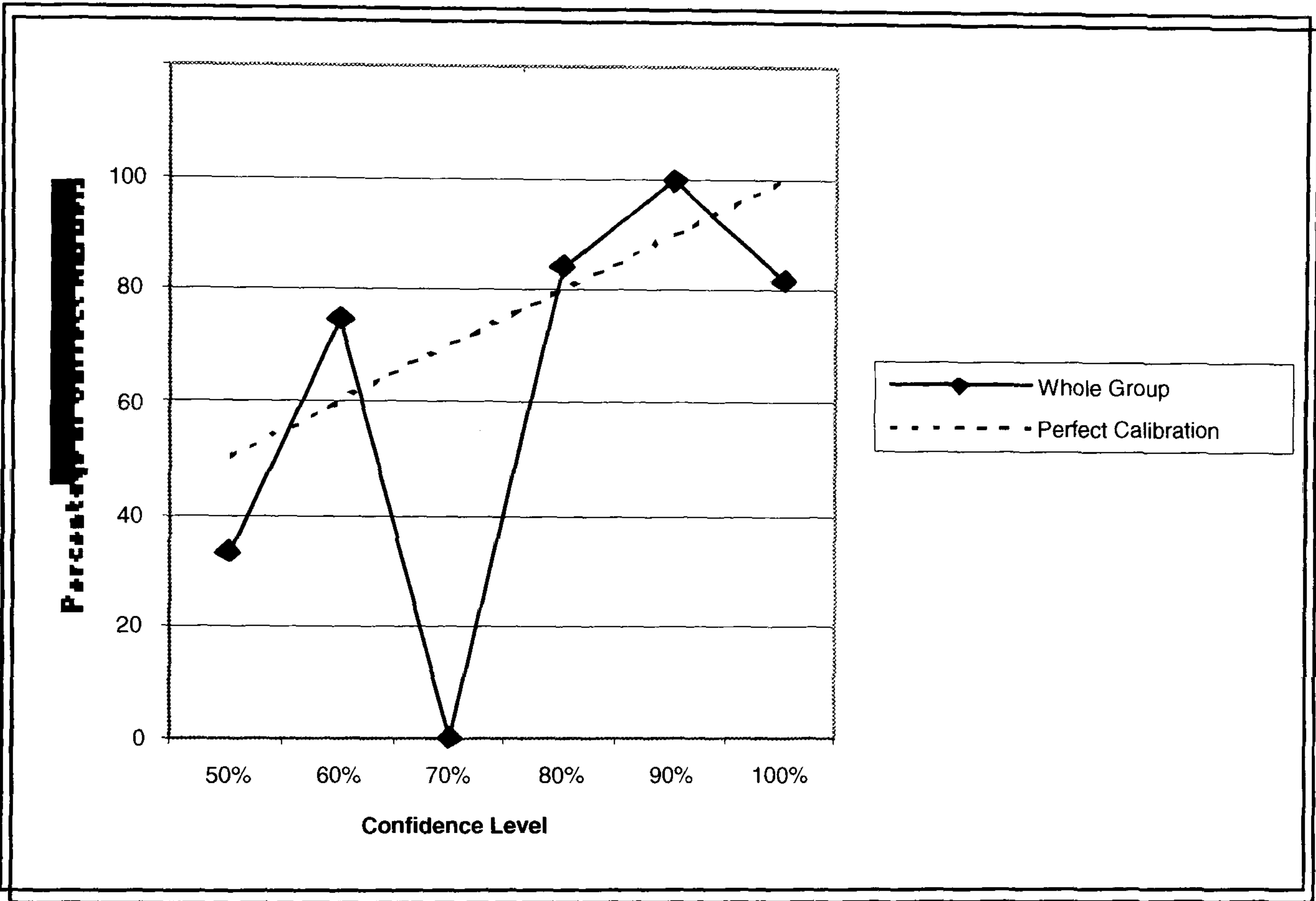
Shaded cells represent categories of overconfidence.

Table 6-17 indicates that of the six categories, the average correctness of the respondents in three groups was less than their self-reported “sureness” ratings. As a group, these respondents are overconfident (highlighted cells). Two groups of respondents were collectively more correct than their self-indicated “sureness” ratings, thus suggesting under-confidence. Eighty-five percent of respondents who indicated they were 80-89% *sure* were correct -- which is neither over, nor under-confident.

Figure 6.3 is a graphic depiction of the sample results compared to the perfect calibration curve. The perfect calibration curve is the imaginary line above which is the “under-confidence domain,” and below which is the “overconfidence domain.” Three of the six confidence level categories show percentage correct responses that are much lower than the confidence level categories in which the respondents place themselves. Visual inspection highlights that the largest area around the perfect calibration curve is under the curve, in the overconfidence domain, and points to the non-linearity of the data. The 50, 70 and 100 percent confidence level categories show average correct answers that are lower than the perfect calibration curve. The 60 and 90 percent confidence level categories show average correct answers that are higher, indicating under-confidence, and the 80 percent confidence level category is about even. The large drop at the 70 percent confidence level category simply represents one respondent who indicated they were 70 – 79 percent sure of their

answer, but answered incorrectly. Thus zero percent of the respondents in the 70 percent sure category were correct.

Figure 6.3 - Over- and Under-confidence for Business Angels



A similar analysis of novice and habitual angels demonstrates the more overconfident inclination of novice angels. By looking at the 12 categories of over- and under-confidence, six exhibit overconfidence (lightly shaded cells), one where the average responses are the same as the category in which they reside (dark shading), and five exhibiting under-confidence (no shading). The over- and under-confidence is fairly equally split when examined in this manner, however, the novice group has more categories of overconfidence than habitual angels. Novice angels have four categories of overconfidence compared to

habitual angels which have two categories of overconfidence. The number of participants in some cells are so low that no strong conclusions can be drawn.

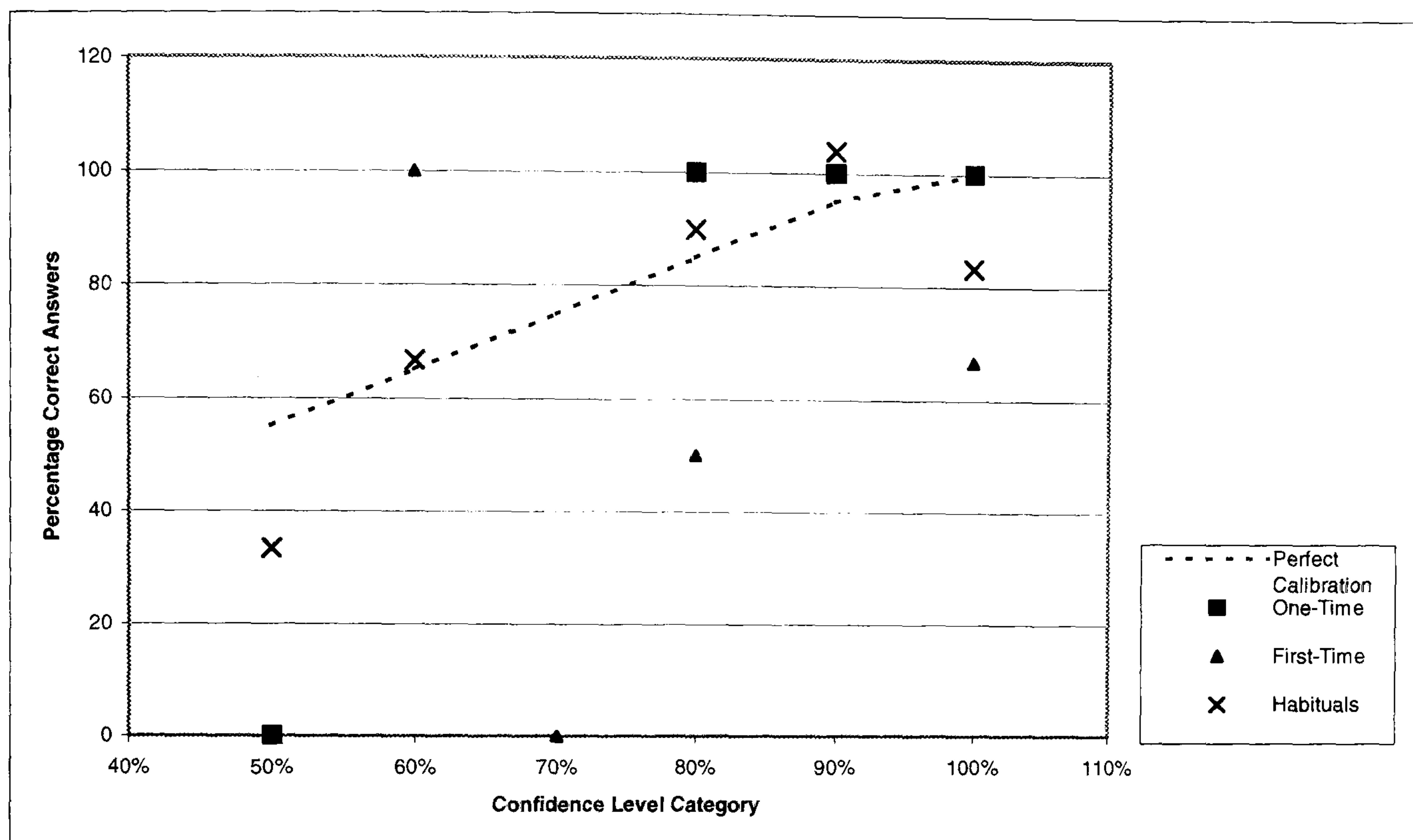
Table 6-18 – Over- and Under-confidence of Novice and Habitual Angels

		Estimation of Accuracy					
		50 - 59% sure	60 - 69% sure	70 – 79% sure	80 - 89% sure	90 - 99% sure	100% sure
One-Time	Correct Answer	0.0%			100.0%	100.0%	100.0%
	Total	1	0	0	1	1	2
First-Time	Correct Answer	0.0%	100.0%	0.0%	50.0%		66.7%
	Total	1	1	1	2	0	3
Habitual	Correct Answer	33.3%	66.7%		90.0%	100.0%	83.3%
	Total	6	3	0	10	4	6

Lightly shaded cells represent overconfident categories. Dark shaded cells represent neither under-, nor overconfidence. No shading represents under-confidence.

Figure 6.4 highlights the detail when the total angel sample is split into one-time, first-time and habitual angels. Three of the four data points for one-time angels indicate under-confidence (above the perfect calibration line), whereas three of the four data points for first-time angels are in the overconfidence area (below the perfect calibration line). Of the five data points for habitual angels, three are in the under-confident area. Again, each cohort demonstrates non-linearity in their overconfidence measure ratings.

Figure 6.4 - Over- and Under-confidence in Novice and Habitual Business Angels



The previous analysis is illustrative, but the data points do not reflect the number of responses in each category and so it is not weighted. The means for the overconfidence measure described in Chapter 5 are displayed in Table 6-19. Negative measures indicate under-confidence and positive measures indicate overconfidence. The sample's one-time angels display under-confidence whereas the first-time angels display overconfidence. Habitual angels, and serial and portfolio angels' means are in the under-confident range. While first-time angels' means are in the appropriate direction for the hypothesis, there is insufficient statistical evidence to support Hypothesis 8. Hypothesis 8 states that novices will display more overconfidence than habitual angels.

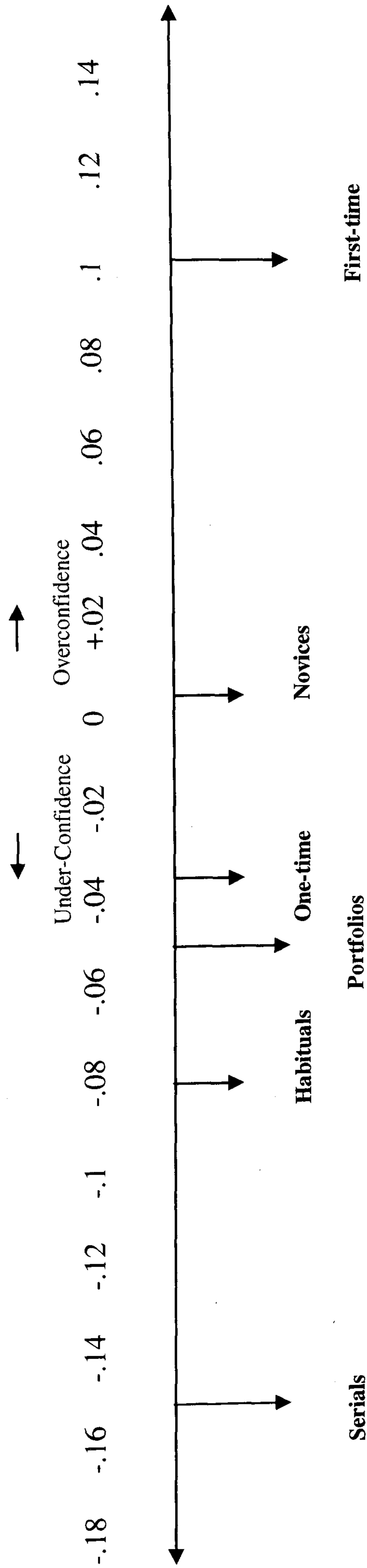
Table 6-19 - Means of Overconfidence Measures

	N	Mean of Overconfidence Measure	Std. Dev.
Whole Group	43	-.053	.2594
Novice	14	+.007	.2947
One-Time Novice	5	-.040	.1140
First-Time Novice	8	.100	.3251
Habitual	29	-.083	.2406
Serial	9	-.156	.1810
Portfolio	20	-.050	.2606

+ value indicates cohort engages in overconfidence
- value indicates cohort engages in under-confidence

A continuum of over- and under-confidence for angels helps to understand the relative relationship of the heuristic and is expressed in Figure 6.5. The means of the measures are placed on a continuum. Numbers less than zero are under-confident and those greater than zero are overconfident. The novices overconfidence is obviously heavily influenced by first-time investors.

Figure 6.5 - Continuum of Over- and Under-confidence



6.4.3 Summary and Discussion

The major findings in this section are:

- The use of non-statistical reasoning (representativeness) is widespread amongst representative samples of angels.
- Novice angels are weakly significantly more inclined to make use of representativeness than habitual angels (support for Hypothesis 7).
- One-time novices make significantly more use of representativeness than first-time novices and habituals (support for Hypothesis 7).
- As a group, the sample is generally under-confident rather than overconfident.

Hypothesis 7

This analysis is the first time that business angels have been assessed cognitively. Measures used were those that have been employed on entrepreneurs and managers (Forbes, 2005; Busenitz & Barney, 1997). It was argued in Chapter 4 that business angels were not compelled by fiduciary responsibility to act in a manner that substantially reduces information asymmetry which may incline them towards the use of cognitive heuristics.

Using an information based argument, novice angels were argued to make use of more representativeness than habitual angels because they have fewer investment experiences on which to base their decisions. In the bi-variate analysis, weakly significantly higher rates of representativeness were found for novices, mostly attributed to the one-time angels supporting hypotheses 7.

This finding suggests that an angel who is inclined to invest once and then reports that they will never do so again, makes more use of anecdotes, rules of thumb, gut reactions, personal experience, and non-statistical decision rules when making decisions. It is possible that they do not understand the base rate of failure amongst the population of entrepreneurial firms, or that they ignore that information, make few efforts to reduce asymmetries. It is noteworthy that these differences take place at the level of the first investment and so it may be possible to differentiate between those who will become habituals and those who will never invest again by the degree of representativeness they exhibit.

On the other hand, individuals do not apply statistical reasoning evenly across differing situations. Thus, representativeness reasoning can be applied by one individual in one type of situation and statistical reasoning employed by the same individual in another situation (domain) (Fong & Nisbett, 1991). The situations presented in the survey problems were equipment purchase decisions where industrial reports presented the results of studies drawn on dozens and hundreds of companies. Most the most active angels' investment decisions are based on very few numbers. Thus the two domains (that represented in this study and that of angels) may be very different.

The inclination for novice angels to use non-statistical rationales for decision-making may be the root of the substantive anecdotal evidence that angels use "gut feel" when appraising informal investments (Timmons, 1990; Van Osnabrugge & Robinson, 2000, 2000b). In fact, by definition, citing personal experience as being more valuable than industry-wide information is an indicator of the heuristic, representativeness. Relying on intuition, mitigates the amount of appraisal required by angels since a decision based on gut feel requires less due diligence and its associated costs. Since novices in general, and one-time angels in particular, are more inclined to the use of representativeness, it reinforces a profile

of first-time angels and habitual investors as more diligent and expert in their thought processes and more prepared to accept a breadth of information.

There are no studies of formal venture capitalists' use of representativeness, however, Busenitz and Barney's (1997) aforementioned managers were responsible for more than two functional areas and significant oversight duties. Thirty-eight (38.4) percent of those managers made use of representativeness. In this study, more than two-thirds of angels (71.8 percent) made use of representativeness. A binomial test using the results of the managers' survey indicates that there are significant differences between the use of representativeness amongst business angel investors and professional managers who have significant oversight and responsibility for a variety of functional areas [observed proportion = 71.8; test proportion = 38.4; $p = .00$]. Busenitz and Barney's (1997) study indicated that 61.5 percent of entrepreneurs made use of representative reasoning. This is not significantly different than the results found for business angels based on a binomial test for one dichotomous variable [observed proportion 71.7; test proportion = 61.5; $p = .123$].

Hypothesis 8

In general, habitual angels exhibited under-confidence in the bi-variate analysis. The lack of overconfidence exhibited amongst most business angels is a distinguishing feature between angels and entrepreneurs. If, as asserted by Busenitz and Barney (1997), overconfidence is necessary for entrepreneurs to overcome the hurdles which they will face, the under-confidence exhibited by business angels may be a tempering force to reduce entrepreneurs' over-optimism. Markman, Baron and Balkin (2000, p. 91) did not decipher any significant difference between technical entrepreneurs and technical non-entrepreneurs. However, as patent holders, the scrutiny and analytical investigation required of these individuals may "reduce unwarranted overconfidence" routinely challenging their decisions and assumptions. This scrutiny may cause their overconfidence profiles to be very similar.

6.5 Multi-variate Modelling

In Section 6.2, compared to novices, habituals' financial motivations did not significantly vary though they were associated with a disinclination towards *Community Consciousness*.

In Section 6.3, a deal generation PCA revealed three components, but the lack of any significance between novice and habitual angels suggests there are influences amongst the variables which are not apparent in bi-variate analyses. Habituals were also weakly defined by making less use of the heuristic associated with non-statistical reasoning in decision-making than novices in Section 6.4. Motivations, deal generation behaviours and cognitive tendencies give insight into isolated qualities, however, it is more likely that habitual angels are more aptly described by a combination of these qualities interacting and contributing to the complex human condition of making multiple investments in new ventures.

Consequently, the explanation of habitual behaviour is likely to be better described by a more complex set of qualities.

Multi-variate modelling permits the introduction of a variety of variables to ascertain an overall picture of an habitual angel by accounting for control variables whose influence are not apparent in bi-variate analyses. Multi-variate logistic regression is used here to identify variables that are associated with re-investment behaviour. The research problem is to determine whether appraisal qualities can be used to distinguish habitual behaviour, recognising that some novices may go on to become habituals.

This section proceeds by examining the control variables used in the multiple logistic regression as well as the rationale. Then the regression results are presented. A summary of the findings and a discussion concludes this section and this chapter.

6.5.1 Control Variables

Other angel characteristics may be expected to affect the propensity to habitual activity.

They are noted here and discussed regarding their importance as control variables. They are *Entrepreneur at the time of the investment*, *Years since first investment*, and *Percentage net worth available for future investments*.

As outlined in Chapter 2, entrepreneurship has been closely linked as a quality that distinguishes business angels. Some business angels are cashed-out entrepreneurs, and others, for example Gaston's (1989) "fast trackers," are predominately non-entrepreneurial. One may expect that a wealthy entrepreneur's background would positively influence an angels' habitual behaviour. Therefore, it is employed as control variables to account for the variation it may represent. *Entrepreneur at time of investment* measures the entrepreneurial or non-entrepreneurial status of the angel at the time the investment in question was executed. *Entrepreneur at the time of investment* is a categorical variable in the regression and is coded 1 for an entrepreneur and 0 for a non-entrepreneur.

The amount of time that has passed since an angel's first investment is also a control variable since the passage of time is likely to influence rates of habitual activity. Angels who have just recently made their first investment have simply not yet had enough time to make a subsequent investment regardless of their interests. Angels who have had years pass since their first investment (and possibly exit) may have accumulated sufficient interest and funds to engender renewed interest in informal investing. Controlling for *Years since first investment* recognises that the passage of time is also likely to have some influence on the acquisition of wealth, exposure to networks and informants, and experiences from which to learn. Alternatively, angels who have had too many years pass since their first investment may demonstrate little renewed interest in the area. *Years since first investment* is a scale variable measured by subtracting the date of an angel's first investment from the year 2002.

A third variable expected to influence habitual activity is the percentage of net worth available for future investments. Those with greater proportions of their wealth available for private equity investments are likely to be positively inclined to re-invest. Similarly, high net worth individuals may be more visible to those who are seeking investment, or are more active in seeking investment and so their presence is expected to influence the results. Thus, *Percentage net worth available* is also used as a control variable. It is a scale variable measured in percentages of net worth available for informal investment as reported by the respondents.

The remaining independent variables tested in the regression include: the component analysed scores from the three motivational components (Community Consciousness, Finance and Sporting from Section 6.2), the component analysed scores from the three deal generation behaviours components (Active Seeker, Sought After and Go-Between from Section 6.3), and the measures from the two heuristics (representativeness and overconfidence from Section 6.4). The variables were introduced singly, and then in groups, to identify their influence in the model.

It might be argued that first-time angels should be categorised with the habitual angels, particularly for the purposes of model development. However, first-time novices might intend to re-invest, but never actually do so. The problems associated with finding good investments despite good intentions and funds was explored in Chapter 2. Angels who desire and intend to re-invest regularly report not being able to find adequate investments to do so (Riding et al., 1993). This is much the same as virgin angels who indicate they want to invest, but never find the first investment. Thus, until such point as they re-invest, first-time novices are not differentiated from one-time novices.

First, three control variables were entered as a baseline upon which the appraisal qualities were entered individually and then in groups. The intent is to identify the appraisal qualities that have explanatory power. Due to the small sample size, and for reasons of economy in general, the desire is to achieve the most parsimonious set of explanatory variables.

6.5.2 Regression Model

As defined in Chapter 4, angels either invest more than once or they remain novices, thus setting up a condition of only two possible states of being. Logistic regression or discriminant analysis are techniques employed when the nature of dependent variable is binary. Both these techniques involve the use of metric independent variables and non-metric dependent variables, and are commonly used to study how individuals make decisions (Hair et al., 1998). Due to the presence of at least one non-metric independent variable, as well as the fact that some variables are not normally distributed, and because the dependent variable is dichotomous, logistic regression is the more appropriate technique for this analysis. Logistic regression handles categorical variables and non-normal distributions better than discriminant analysis.

Table 6-8 shows the correlations amongst the variables in the regression model. Because all of the variables were not normally distributed, Kendall's tau-b correlation coefficients were used to conduct the multicollinearity exercise. Two of the deal generation variables demonstrate significant correlation coefficients within their group, and there is a significant, but weak, negative association between the confidence variable and *Years since first investment*. They are entered into the model separately to reduce concerns regarding multicollinearity. Two weakly significant correlations amongst the deal generation components, and two weakly significant correlations between two of the motivational components and *Years since first investment* are treated similarly

The number of observations is small. However, Hair, Anderson, Tatham and Black (1998) point out that a sample of 50 observations with seven potential independent variables is able to detect relationships with r^2 values of 25 percent at a power of .80 with the significance level set at .01. The models presented include five or fewer variables to ensure the minimum of five responses per variable which is suggested for statistical comfort and economy of the variate.

Table 6-21 provides the regression coefficients for a selection of the various models tested. Positive coefficients indicate an increased likelihood of being a habitual angel. As a non-linear model, the coefficients do not represent the marginal effect, however, regression coefficients for continuous variables can be easily converted to calculate their marginal effect on the probability of habitual behaviour at the sample mean (Pampel, 2000). Variables remained in the regression if they were significant, contributed to improving the significance of the model, and if they improved the *predicted percent correct*.

Other important model parameters included are the number of observations per model, -2 Log Likelihood, Nagelkerke R-Square, chi square statistics, degrees of freedom and the significance of the model chi square statistic. Classification table percentages are also presented in the last row; the total figures are presented first and the breakdowns between the two dependent variable categories are presented at the bottom of each cell (H=habitual and N=novice). All the variates shown demonstrate *predicted percent correct* values greater than chance (i.e. > 50 percent) for both categories. All the independent variables are continuous except for *Entrepreneur at time of investment* which is a categorical variable (1=entrepreneur at time of investment).

Table 6-20 - Kendall's tau b Correlation Coefficients (for non-normally distributed data) for Regression Model Variables

	Ent. Time Inv	Net Worth	Overconfidnc	Represent	Comm Cons	Finance	Sporting	ActiveSeeker	Sought After	Go-Between	YrsSince1st
Ent at Time Of Invest- ment	Correlation Coefficient Sig. (2-tailed) N	1.000 . 43									
Net Worth	Correlation Coefficient Sig. (2-tailed) N	-239 .121 34	1.000 . 34								
Over- confidence	Correlation Coefficient Sig. (2-tailed) N	-.045 .739 43	.012 .926 34	1.000 . 43							
Represen- tativeness	Correlation Coefficient Sig. (2-tailed) N	.121 .343 43	-.191 .235 34	-.015 .914 35	1.000 . 35						
Community Conscious- ness	Correlation Coefficient Sig. (2-tailed) N	-.071 .576 43	-.100 .438 34	.056 .617 43	-.077 .565 35	1.000 . 43					
Finance	Correlation Coefficient Sig. (2-tailed) N	.130 .307 43	.049 .704 34	-.044 .694 43	-.110 .414 35	-.024 .818 43	1.000 . 43				
Sporting	Correlation Coefficient Sig. (2-tailed) N	.037 .771 43	-.127 .323 34	.085 .450 43	-.122 .364 35	.040 .706 43	1.000 . 43				
Active Seeker	Correlation Coefficient Sig. (2-tailed) N	.293 .022 43	-.108 .403 34	.076 .502 43	-.116 .388 35	.016 .883 43	-.025 .818 43	1.000 . 43			
Sought After	Correlation Coefficient Sig. (2-tailed) N	.125 .331 43	-.077 .553 34	-.008 .941 43	.059 .661 35	-.065 .544 43	.056 .600 43	.176 .100 43	1.000 . 43		
Go-Between	Correlation Coefficient Sig. (2-tailed) N	-.151 .251 42	.022 .867 34	-.186 .099 43	.063 .639 35	.096 .368 43	-.078 .463 43	-.239 .026 43	1.000 . 43		
Years Since First	Correlation Coefficient Sig. (2-tailed) N	.034 .834 35	.083 .534 33	-.244 .035 42	.010 .940 35	-.209 .056 42	-.090 .409 42	.021 .845 42	.172 .117 42	.095 .384 42	1.000 . 42

Table 6-21– Logistic Regression Coefficients (Beta): Dependent variable coded Habitual Angel=1 Novice Angel = 0

	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10	# 11
Entrepreneur at Time of Investment (Cat) Ent=1	1.071	.962	.941	.774	1.221	2.602	1.085	.819	1.611	6.619*	6.698*
Net Worth Available for Re-Investment	.115	.120	.145*	.123	.093	.147*	.116	.116	.171*	.444*	.440*
Years Since First Investment	.229**	.205**	.283**	.249**	.179*	.381**	.229**	.208**	.245***	.768**	.748**
Comm. Consciousness Motivation		-.569									
Financial Motivation			-.588							-.219	
Sporting Motivation				.549							
Representativeness Heuristic					-1.566*						
Overconfidence Heuristic						2.972*				7.559*	7.587*
Active Seeker Deal Generation							.056				
Sought After Deal Generation								.334			
Go-Between Deal Generation									-1.153	-3.773*	-3.717*
n	33	33	33	33	28	33	33	33	33	33	33
-2 Log Likelihood	29.078	27.818	28.206	28.294	21.628	25.557	29.065	28.678	26.521	18.469	18.499
Nagelkerke R-Square	.450	.485	.475	.472	.495	.545	.451	.462	.520	.708	.708
Chi Square	12.93***	14.19***	13.80***	13.76***	11.87**	16.45***	12.94**	13.33***	15.49***	23.54***	23.51***
Df	3	4	4	4	4	4	4	4	4	6	5
Predicted % Correct	75.8 N = 54.5 H = 86.4	78.8 N = 54.5 H = 90.9	81.8 N = 63.6 H = 90.9	78.8 N = 63.6 H = 86.4	75.0 N = 62.5 H = 80.0	87.9 N = 81.8 H = 90.9	75.8 N = 54.5 H = 86.4	78.8 N = 54.5 H = 90.9	81.8 N = 63.6 H = 90.9	87.9 N = 81.8 H = 90.9	90.9 N = 81.8 H = 95.5

* significant at the .1 level; ** significant at the .05 level; *** significant at the .01 level

The process of identifying influences on habitual behaviour begins at the far left of Table 6-21 with the regression of the three control variables, *Entrepreneur at time of investment*, *Net worth available for investment*, and *Years since first investment*. The variate for the control variables alone are statistically significant and explain 45 percent of the variance. Only *Years since first investment* is significantly associated with the dependent variable at the .05 level. The coefficients for the three control variables are positive indicating that habitual activity is associated with those who have had more years since their first investment, were entrepreneurs at the time of their first informal investment, and who have greater percentages of net worth possible for future investment.

Variates 2, 3 and 4 display the addition of each of the motivational components, *Community Consciousness*, *Finance* and *Sporting*. Each of the variates are significant below the .01 level, but none of the non-controlled variables have significant coefficients. They add only slightly to the Nagelkerke R—square. *Predicted percent correct* rates improve somewhat depending on the motivation. The control variables maintain similar weights, directions and significance as in #1 indicating stability in the regression. The variates for motivational components (#2 to #4) indicate that habitual angels are less inclined to motivations of *Community Consciousness* and *Finance* than are novices, and that habituals are positively inclined (compared to novices) regarding *Sporting*. These findings do not support Hypothesis 2 which suggests that habitual angels are more inclined to financial motivations than novices.

Variates 5 and 6 add the heuristics, *Overconfidence* and *Representativeness* to the three control variables. The control variables maintain the same relative position, weights and signs. The addition of *Representativeness* improves the variate's variance explained to 49.5 percent (over the base model of 45 percent), but not the prediction rate. Both *Years since first investment* and *Representativeness* are weakly significant. Representativeness assumes considerable weight and is negative thereby indicating that habitual behaviour is negatively

associated with the tendency to use anecdotal, heuristic reasoning, and to generalise from small samples. Variate 6 adds the overconfidence variable to the three control variables which explains 54.5 percent of the variance, and the classification of habitual and novices *predicts percent correct* is 87.9 percent [N=81.8; H=90.9]. Three of the variable coefficients are weakly significant or better, and *Overconfidence* is large and positive.

Variates 7,8 and 9 display the introduction of each of the deal generation components scores. None of these models has explained variances, or hit rates that exceed variate #6. None of the newly introduced variables achieves any significance when entered individually to the control variables. *Years since first investment* retains its significance as it has throughout the variates. *Net worth available for investment* achieves some weak significance in #9. *Go-Between* is large and negative indicating a disinclination to habitual behaviour by angels who employ investment clubs and intermediaries compared to novices when controlled for entrepreneurial status, net worth and years of investment experience. The variate explains 52 percent of the variance, and the *predicted percent correct* is 81.8 percent [N=63.6; H=90.9]. While each of the variates 7, 8 and 9 are significant, none of the components are significant. Thus, Hypothesis 4 which indicates that habitual angels conduct more-proactive deal generation activities than novices cannot be supported, nor can Hypothesis 5 which suggests that habitual angels are the recipients of more passive deal generation behaviours than novice angels.

A variety of variables were introduced in differing combinations to view the relative influences under controlled conditions. Only those with significant or weakly significant variables and significant variates overall are shown in Table 6-21. Number 10 includes the three control variables regressed with *Financial*, *Overconfidence* and *Go-between*. Model significance and the *predicted percent correct* both improve to .001 and 84.8 percent respectively, and 68.8 percent of the variance is explained. In this version, four variables are weakly significant or better. All of the shown variables have similar directions as when

entered into the previous models individually. *Representativeness* was not included in the combined variates because, when added with the other appraisal variables, its significance disappeared.

Before beginning the review of the regression results, it should be noted that it was not possible to enter all variables into the final variate because of the limitations of a doctoral thesis and the resulting small number of respondents. In order to maximise the number of observations per variable, only a small number of variables could be part of the final solution. Therefore, efforts were made to include one variable from each of the major appraisal categories (motivations, deal generation and heuristics). Those selected to be entered in combination solutions (simultaneously) were those that were significant when they were entered individually (with the control variables).

The overall *predicted percent correct*, significance and parsimony of the model is maximised in #11 when the motivation variable, *Financial*, is also removed due to its small coefficient and non-significance in #10. Number 11 is based on 33 observations, has the best model significance of all the models presented ($p < .001$), explains 70.8 percent of the variance, and has a *predicted percent correct* of 90.9 ($N = 81.8$ and $H = 95.5$). The value of the chi-square statistic increased from 12.93 in the three control-variable model (#1) to 23.51 in the five-variable model (#11). Four of the variables assume weak significance and *Years since first investment* is significant below the .05 level. The smaller number of variables – compared to variate #10 -- improves the variable to observation ratio as well as model parsimony.

Net worth available for future investment and *Years since first investment* are both positive indications of habitual behaviour. Being an *Entrepreneur at time of investment* has a large, positive coefficient as does *Overconfidence* indicating that in the model these variables are positive indications of habitual activity. *Go-between* is negatively associated with habitual

activity and is weakly significant indicating that habituals are less likely to use investment groups, acquaintances of entrepreneurs and intermediaries than novices when controlled for entrepreneurship, time and net worth. In #11, *Years since first investment* is the only variable which exceeds the usual significance levels. All the other variables meet the standards of this exploratory work. It was noted earlier that this exploratory work would highlight significances up to .10 levels in order to cast a wider net so as not to exclude sensitive nuances that may point to interesting areas for future study.

The log odds calculated from of the regression analysis are interpreted as follows. When *Entrepreneur at the time of the investment* changes from 0 (not an entrepreneur) to 1 (an entrepreneur), it increases the logged odds²⁶ of being an habitual angel by 6.698. A one-percentage point increase in the net worth available for informal investment increases the logged odds of habitual behaviour by .440. A one-year increase in the number of years since an angel's first investment increases the logged odds of becoming an habitual angel by .748. A one-unit increase in the *Overconfidence* measure increases the logged odds of habitual behaviour by 7.587. A one-unit increase in the *Go-between* measure decreases the logged odds of habitual behaviour by 3.717.

If the beta coefficients (presented in the chart) are exponentiated, they provide the following interpretations. A one-year increase in the number of years since their first investment increases the odds of habitual behaviour by a multiple of 2.113, or by 111.3 percent. A one percentage increase in the amount of funds currently devoted to future informal venture capital investments increases the odds of habitual behaviour by a multiple of 1.553, or by 55.3 percent. Being an entrepreneur at the time of their first investment increases the odds of habitual behaviour by a multiple of 811, or 81,000 percent. Increasing the measure of

²⁶ In statistics, odds have a specific interpretation than its common usage (which would be more accurately described as probability). Odds are the probability of an event's occurrence divided by the probability that the event will not occur (Pampel, 2000). Therefore, Odds = $P / 1 - P$.

overconfidence by one increases the odds of habituality by a multiple of 1973, or 197,000 percent. Lastly, increasing the intermediation/intervention measure by one reduces the odds of habitual behaviour by a multiple of .024, or 97.6 percent.

Probabilities are most intuitive interpretations for non-statistically oriented readers, so the marginal effect of the continuous independent variables on the probability of habitual behaviour at the sample mean are calculated using the proportions of this sample. In this sample, the proportion of novices was .326 and the proportion of habituals was .674. A one-year increase in the number of years since the first investment increases the probability of habitual behaviour by .164, or 16.4 percent at the sample mean. A one-percentage point increase in the net worth devoted to future informal venture capital investments increases the probability of habitual behaviour by .097, or 9.7 percent, at the sample mean. A one-unit increase in the amount of intermediation/ intervention reduces the probability of habitual behaviour by .892, or 81.2 percent, at the sample mean. Lastly, a one-unit increase in the amount of overconfidence increases the probability of habitual behaviour by 1.667, or 166.7 percent, at the sample mean.

6.5.3 Summary and Discussion

Logistic regression is employed to examine the role of one variable controlling for the presence of time, net worth and entrepreneurial status which may influence habitual behaviour. A significant and parsimonious model has emerged which has five variables which are all weakly significant or better, and for which the dependent variable is correctly predicted 90.9 percent of the time. Shown as #11 in Table 6-21, habitual activity is best predicted by using a heuristic (*Overconfidence*) and a deal generation component (*Go-between*). The main findings are presented below.

- The control variables alone -- time, net worth availability and entrepreneurial status -- have considerable potential in determining habitual behaviour.
- Neither deal generation, nor motivational component score variables emerge as significant when controlled for time, net worth available and entrepreneurial status.
- There is a large, positive and weakly significant relationship between *Overconfidence* and the dependent variable.
- There is a large, negative weakly significant relationship between *Representativeness* and the dependent variable, when controlled for time, net worth available, and entrepreneurial status.
- For this sample, a variate that includes the three control components, as well as *Overconfidence* and the intermediated deal generation component, *Go-between*, best represents the associations between appraisal qualities and re-investment.

The controlled multi-variate analysis produces different results than were indicated by the bi-variate and PCA analyses in Sections 6.2, 6.3 and 6.4. These variations would be a result of the multiple correlations in combination with the control variables. The results of the multi-variate analysis (PCA or logistic regression) supersede bi-variate analyses. Logistic regression results may supersede those from the PCA because the influences amongst variables (not a part of a scale) is the point of logistic regression.

The bi-variate analysis for hypothesis 1 indicated that one financial motive was seen to be more prevalent in habituals than in novices. However, when subjected to controlled multi-variate conditions (PCA and logistic regression), the financial relationship indicated no significant association between financial motivations and habitual behaviour. Regarding deal generation, PCA analysis identified a weakly significant negative relationship with pro-active

deal generation activities (opposite direction to Hypothesis 4) that was not apparent in the controlled logistic regression.

On the other hand, in the presence of controlling variables, the *Go-between* component is weakly significant, but *negatively* associated with habitual behaviour. This is in the opposite direction to that which was expected. Thus, habitual angels appear to actively shun informant-driven activities at the level of their first investment which does not support Hypothesis 5 which proposed that habitual angels would engage in more informant-driven deal generation activities. Given this finding, the large informant-based deal generation literature may be explained by studies reporting the accumulated experiences of habitual angels who have conducted a number of different investments (rather than this study which compares first investments of novices and habituals). The finding may also be explained by the acquisition and accumulation of informants and acquaintances over a period of time (by habitual angels), thus leading to increased numbers of informants to draw upon in cross sectional studies.

The presence of *Joined an investing group* should be re-examined in light of its emergence as a variable in the third component *Go-between*. This variable may be more passive in nature (like *Joining a business introduction service*) than is apparent if angels perceive investment clubs as a means of acquiring investment deal information in an essentially passive manner.

The controlled logistic regress confirmed the significance of increased use of the heuristic, *Representativeness* in hypothesis 7. *Overconfidence*, which was not significant in the bi-variate analysis emerged from the controlled multi-variate analysis as significant in every iteration – and positively related to habitual behaviour.

Both *Representativeness* and *Overconfidence* were weakly significant in each of the variates in which they were added as explanatory variables (Variates 5 and 6). Habitual activity was shown to be negatively indicated by *Representativeness*, and positively indicated by *Overconfidence*. Variate # 5 is significant below the .05 level suggesting support for Hypothesis 7 that proposes that novices will manifest representativeness more than habituals. Variate # 6 is significant below the .01 level, however, when controlled by time, entrepreneurship status and net worth, habituals are *positively* inclined towards overconfidence which is opposite to the expected direction for Hypothesis 8.

The results to this stage are outlined in Figure 6.6. Reviewing information theory that underlies the resulting variate discloses a somewhat disturbing, but parsimonious variate (Norusis, 1990) to explain habitual behaviour. The negative association between *Go-between* and habitual activity at the level of their first investment – under controlled conditions -- may be explained by an informational environment that is inadequate. At the level of the first investment, opportunities for intermediation may be less obvious and less valued. Habitual angels eschew intermediation as the source of deals. The survey took place in a locale where BANs and BISs are not prevalent which reduces the ability to acquire previous knowledge about the value of informants' referral credibility. Lastly, because the comparison is novices' first investment with habituals first investments, habitual angels may not yet have acquired the ability to generate a group of informants.

The presence of a large, positive and weakly significant coefficient for overconfidence, can also be explained in an information-based model. The advancing age of investments (the control variable which was weakly or significant in every iteration of the variates) is directly related to the advancing age (of individuals) which has been shown to be negatively associated with overconfidence regarding new venture managers and entrepreneurs (Forbes, 2005). Thus, when the influences of time are removed, habitual angels are more closely

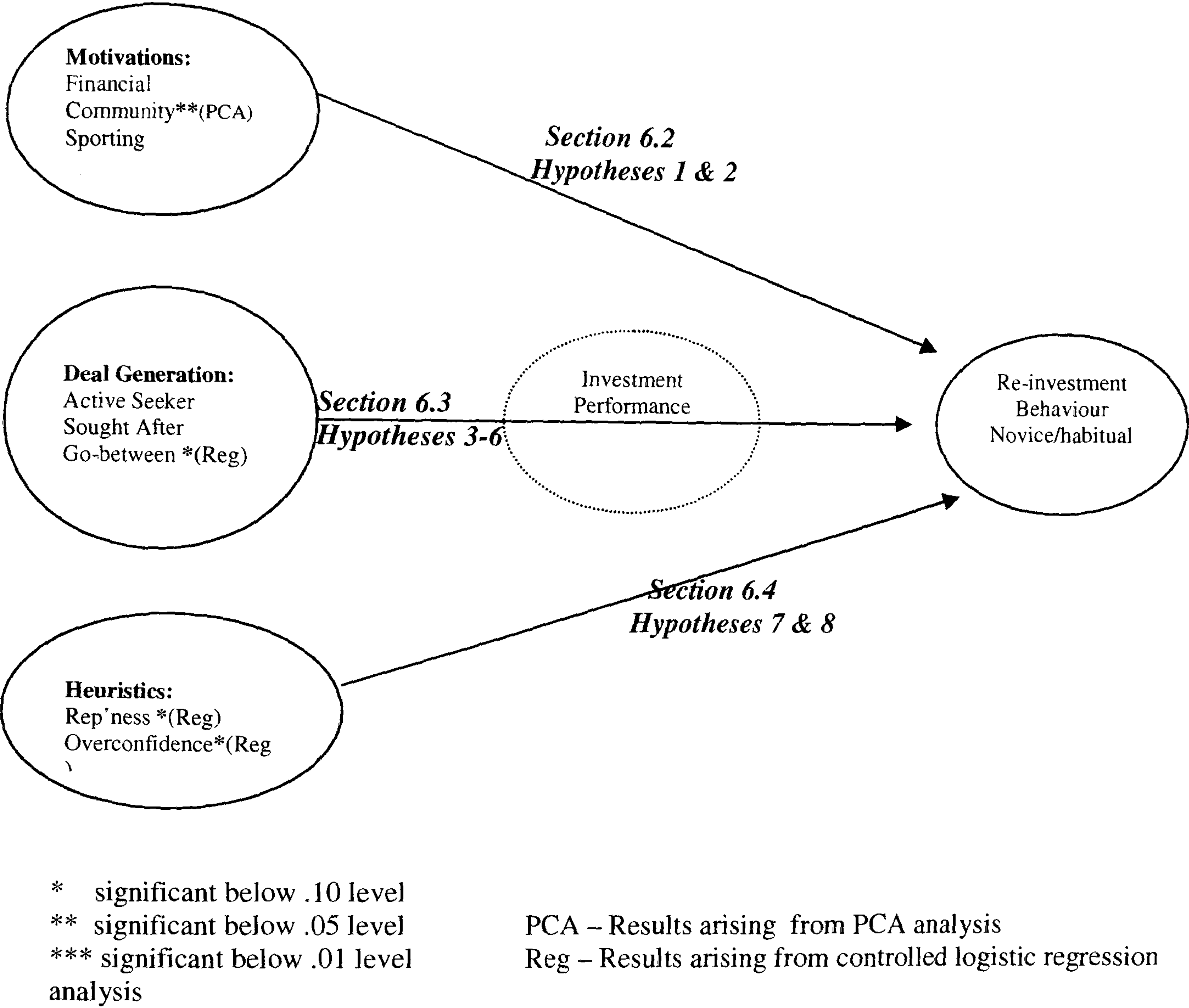
associated with *overconfidence*²⁷. This is in keeping with formal venture capitalists who are overwhelmingly characterised as overconfident (Zacharakis & Shepherd, 2001) and entrepreneurs (Busenitz & Barney, 1997). Habitual business angels are positively associated with over-estimating their ability to correctly assess information. In fact, this quality may be necessary for high risk, uncertain situations such as informal investment. Habitual angels' overconfidence may be a defacto prerequisite given that an under-confident manner may imply a lack of support for the investee or entrepreneur.

6.6 Conclusion

In the context of the overall model of habitual activity as modelled on Amit et al. (1998), this chapter examined the association of appraisal qualities on business angels re-investment behaviour. Earlier in the chapter, this was graphically portrayed similar to Figure 6.6. (The relationship to investment performance was not addressed in this chapter.) Because the sample was representatively selected, a number of multi-variate analyses were possible. The PCA analyses of motivations and deal generation produced the components seen in the various categories below. This has added to the debate because the PCA results differ from those upon which the debate has hitherto been framed.

²⁷ The independent variable *Number of years since first investment* significantly explains 32 percent of the variance in the habitual angel dependent variable.

Figure 6.6 - Appraisal Qualities and Habitual Activity



In the figure above, some significant relationships between appraisal variables and re-investment are noted even though they were not hypothesised. The hypotheses were originally constructed using terminology and qualities found in the literature. However, the multi-variate analyses produced some components that were unforeseen. For example, the deal generation debate was framed in the passive/informant versus pro-active/deal search language of the angel literature. The emergence of entrepreneurial solicitations (*Sought After*) and informants (*Go-between*) as separate components is illuminating and should be noted

(particularly since it emulates the formal venture capital process). As an exploratory work, highlighting these relationships promotes the likelihood of further study in the area.

Some limitations of this work include the exploratory nature of the data set due to relatively limited sample of angels. As a thesis study, this was unavoidable for reasons related to costs. Not all of the variables could be included in the final model to ensure the number of cases was appropriate for the variables. As with all logistic regression, there are concerns that the model simply fits the sample which may be different from a different sample drawn from the same population (Norusis, 1990). The representative manner in which the sample was selected helps alleviate some of the latter concerns.

In addition, the *Go-Between* component – which has emerged as an important indicator in the regression variate -- demonstrated the weakest Chronbach's alpha (.55) but was permitted to remain in the analysis. The .6 cut-off was employed only as a guideline. Stretching the guideline to include *Go-between* has produced some interesting observations, but which clearly need more work to improve its scale and significance in a controlled model.

Table 6-22 outlines the findings from Chapter 6 as they relate to one-time, first-time, novice and habitual angels. Compared to habitual angels, novices are more motivated by concern for community and social concerns in their informal investing. As a group, novices may make use of more representativeness than habituals as well.

Table 6-22 - Summary of Appraisal and Re-investment Behaviour

Significant (< .05)	Weakly Significant (< .10)
Compared to habitual angels, novices:	
More inclined to be motivated by <i>Community Consciousness</i>	Make more use of representativeness
Compared to habitual angels, first-time angels:	
Are more motivated by <i>Challenge of new venture</i>	Are less motivated to <i>help an aspiring entrepreneur</i>
Conduct more deal generation activities in total	Are less motivated by <i>picking a winner</i>
	Are more inclined to <i>Community Consciousness</i>
Compared to habitual angels, one-time novices:	
Make more frequent use of <i>Representativeness</i>	Less motivated by <i>Capital appreciation</i>
Conduct fewer deal generation activities in total	
Compared to one-time angels, first-time angels:	
	More <i>Pro-active</i> in their deal generation
	More <i>Active Seeking</i> in their deal generation
Compared to first-time novices, one-time novices:	
More motivated to <i>Help an aspiring entrepreneur</i>	More inclined to <i>Sporting</i> motivations
Less <i>Pro-active</i> in their deal generation activities	

First-time angels, a sub-set of novices, and those who intend to invest informally again are more motivated by the challenge of a new venture and conduct a broader range of deal generation activities than habitual angels. As novice investors, intending to become habitual investors, they demonstrate more initiative in searching for investments. First-time angels may also be less motivated by helping aspiring entrepreneurs and may be less concerned with picking winners. They may be motivated by social and community concerns as well.

One-time novices, the sub-set of novices who do not intend to re-invest, more frequently use non-statistical reasoning in decision-making than habitual angels, and they conduct fewer deal generation activities overall compared to habitual angels. Both of these features may contribute to their decision not to re-invest. Compared to habitual angels, one-time angels may be less motivated by capital appreciation.

When comparing the two sub-sets of novices to one another, first-time angels may be more pro-active in their deal search and may engage in more initiatives designed to locate business opportunities than one-time angels. On the other hand, one-time novices are more motivated to help an aspiring entrepreneur and may be motivated by more sporting motivations such as fun, excitement and challenges.

The logistic regression shows that habitual angels have tendencies to be overconfident with negative tendencies towards associations with informant/intermediary-type deal search activities. The overconfidence variable may be expected given their entrepreneurial dispositions, however, the anti-informant/intermediary association is of interest as it contradicts much of the literature. While the population area from which the angels were sampled has no BISs, other types of informants and acquaintances would be expected to play a role in their deal generation activities.

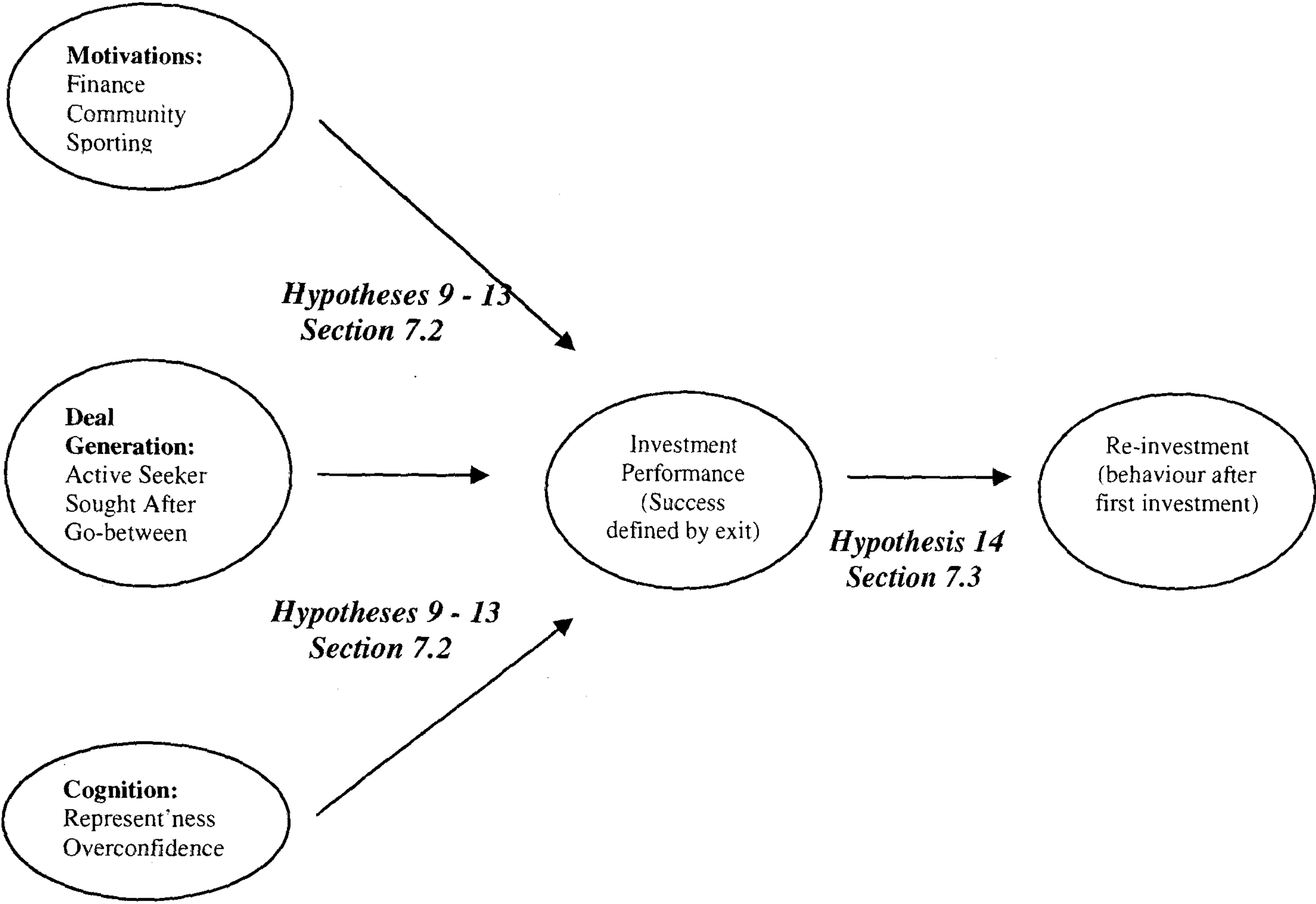
7 Results of Investment Performance, Appraisal Qualities and Habitual Behaviour

7.1 *Introduction*

The ability to forecast, develop and facilitate new venture teams to successful exits is the essence of the skills and abilities that differentiate effective from ineffective venture capitalists. In the information model proposed by Amit et al. (1998) successful venture capitalists perpetuate the existence of the industry by being effective appraisers of business opportunities, achieving successful returns for themselves and their limited partners, and enabling them to raise new funds. To the extent that successful appraisal qualities precipitate favourable exit opportunities, appraisal indicates performance. At the informal level, however, liquidity events are often scarce since markets for private investments are inefficient. In the environment of difficult exit events, some appraisal qualities may be more indicative of performance than others. Additionally, once an exit is achieved, the relationship between successfully exited investments' and future habitual behaviour is well-documented in the formal venture capital industry. However, the repeat behaviour of investment activity related to exit performance is unknown in the informal industry. These questions are posed in Hypotheses 9 to 14.

This chapter examines the ability of appraisal qualities and their relationship to successful investment exits. In addition, the influence investment success on the inclination to become a habitual angel is also studied. The model shown in Figure 7.1 highlights the relationships to be discussed in this chapter.

Figure 7.1 - Appraisal Qualities, Investment Performance and Habitual Behaviour



This chapter proceeds by examining the various states of angel share holdings. The share status are more varied than those of formal venture capitalists because angels are not required to close their funding activities at a predetermined point in time. The share holdings are collapsed to economic and uneconomic exits. The angels' appraisal qualities are regressed against the economic and uneconomic exits to determine the appraisal qualities association with successful exits. In the next section, the exits are compared to the angels' repeat

behaviours to ascertain if successful exits are associated with repeat behaviour. The chapter concludes with a summary and discussion of the findings regarding the relationship between performance and exits and business angels' appraisal qualities.

7.2 Influence of Appraisal Qualities on Exit Success

This section is composed of three subsections regarding the influence of appraisal on exit success. First, the data regarding angels' exits are illustrated and some classifications are collapsed to reduce the number of categories. The next subsection discusses the multi-variate methodology to identify which appraisal qualities are associated with exit success. This is followed by the results of the logistic regression and a summary and discussion of the overall findings of the section.

7.2.1 Share Ownership and Exit Success

The investigation of investment performance begins with an examination of the status of the shares from each of the investments denoting whether angels' exit or hold their investments. Table 7-1 illustrates the share status findings. Most investors were still holding the shares for the investments they had made. The proportion of angels holding their shares is 38.1 percent, 53.6 percent, 66.7 percent, and 50 percent over the first to fourth investments respectively. It is reasonable that the rate of shares still being held generally increases from the first to the fourth investment because subsequent investments are more recent and less likely to have been exited or closed.

A small percentage of investors in each category (2.4 percent, 4.6, 6.7 and 0 percent respectively) described their shares as being part of a venture that is still operating, but for which there is no hope of recovering the investment. These are referred to as the 'living dead' in the formal venture capital literature. This category was little used, pointing to

angels’ optimism regarding their investments since virtually all but a small percentage of angels still holding their shares believed there was some hope for a future exit.

Investments that closed voluntarily represent between 19 to 0 percent, gradually declining across subsequent investments. Those that indicated bankruptcy varied in subsequent investments (14.3 percent, 17.9, 0 and 20 percent). Combined, these two categories, represent the largest proportion of shares exited, albeit not profitably.

Table 7-1 - Status of Shares from Investments (frequency in %)

	Investment			
	1st	2nd	3rd	4 th
N	42	28	15	10
Still own my shares:	38.1	53.6	66.7	50.0
Less than 10 years old	(27.6)	(42.9)	(53.3)	(50.0)
More than 10 years old	(9.5)	(10.7)	(13.3)	(0.0)
Company in business - no hope of recovering investment	2.4	3.6	6.7	0.0
Business closed voluntarily	19.0	7.1	0	0
Business went bankrupt	14.3	17.9	0.0	20.0
Sold my shares to entrepreneur	14.3	0.0	0.0	10.0
Sold my shares to another person	2.4	0.0	0.0	0.0
Sold my shares to a venture capital company	0.0	0.0	6.7	0.0
Venture was sold to another company (trade sale)	7.1	14.3	13.3	20.0
Venture went public (IPO)	2.4	3.6	6.7	0.0
Total	100.0	100.0	100.0	100.0

() Values in parentheses are sub-sets of the total category of “Still own my shares”

Five categories represent the potentially profitable exit events for business angels (discussed in Chapter 2). These are selling shares to entrepreneurs, selling shares to other persons, selling shares to venture capital companies, trade sales, and IPOs. Individually, each category shows minimal percentages, however, when totalled the five categories indicate potentially profitable exits for 26.2 percent, 17.9 percent, 26.7 percent and 30 percent respectively from first to fourth investments. Trade sales are the most frequent method of potentially profitable

exits for angels – ranging from 4.8 percent to 10.7 percent over the first four investments.

Sales of shares to entrepreneurs represent the next most frequent category of potentially profitable exit. A small number of angels were able to exit by going public and exiting to a venture capital firm was an option for only one angel on one occasion.

From a scholarly and practical perspective, angels who are still holding their shares fall into two groups. There are those who are holding their shares for a reasonable period of time and yet have a chance of exiting profitably, and there are those who have been holding their shares for so long that the IRR is threatened sufficiently to render the investment uneconomic. It is possible that the latter may include some angels who now work at their investments, generate a salary, or an ongoing dividend, or have no intention of exiting. Denoting shareholders in this way raises the question as to what age marks the division between those that still have a likelihood of exiting profitably and those that do not. The timing and exit horizons of business angels was discussed in Chapter 2 and the patient nature of informal venture capital investment was explored. Recapping briefly, angels hold their investments longer than formal venture capitalists even though most explicitly stated exit expectations less than those of formal venture capitalists. Apparently the average age of business angels' investments are longer than angels expect. Most formal venture capital funds expect harvest in six to seven years.

For the purposes of this study, 10 years is assigned as the threshold between share holdings that have the potential for future economic exits versus share holdings that have little potential for future profitable exit events. The selection of 10 years is somewhat arbitrary though it makes accommodation for the widely held notion of patient capital (despite angels' explicit expectations) and is about 50 percent longer than the formal venture capital average. Angels' investments that are older than 10 years may still exit profitably, however, the

optimum timing for exiting a growth investment profitably has most likely passed. The percentages for this differentiation are noted in Table 7-1.

Based on the foregoing discussion, a detailed examination of the data demonstrated that a small proportion of the investments for those still hold their shares are older than ten years – some as old as 25 years. Furthermore, none of the respondents who indicated that they were still holding their shares ten plus years noted their involvement in the firm was sufficient to suggest they were treating the investment as a salary. Their proportion of weekly work week devoted to the investment was used to make this determination.

Collapsed Exit Data

To summarise the data, particularly where small frequencies are indicated, some categories were collapsed resulting in four categories of share status that relate to exit status such as: having exited economically already, having exited uneconomically already (bankruptcy, closure, living dead or aged 10+ years), and the potential to yet exit economically. They are shown in Table 7-2 on page 310. Based on the foregoing discussion, investments that were less than 10 years old were still considered to be able to exit economically and were placed in the *Potential for Economic Exit*, and investments that were older than ten years were placed in new category of *Uneconomic Exits – living dead or shares held 10 years plus*. This table also shows the average age of each group of investments, as well as the multiples for each group²⁸.

²⁸ Calculated by the author, not the respondent,

Table 7-2 – Collapsed Share Status (Percentages) & Rate-of-Return (Multiples)

	1 st			2 nd	3 rd	4 th
	One-Time	First-Time	Habituals			
N	4	4	29	28	15	10
Potential for Economic Exit: Still own shares less than 10 years (%)	50.0	50.0	20.7	42.9	53.3	50.0
Uneconomic Exit: Living dead or Shares held 10 years+ (%)	25.0	0.0	10.3	14.3	20.0	0.0
Business bankrupt or Closed voluntarily (%)	25.0	25.0	37.9	25.0	0	20.0
Economic Exit: Sold to entrepreneur, individual, VC, trade sale, IPO (%)	0	25.0	31.0	17.9	26.7	30.0
Mean multiple returns for those with economic exit (Xs)	--	.40	1.86	1.04	3.98	1.80
Mean number time elapsed since investment (years)	4.8 ^b	6.6 ^a	13.6 ^{ab}	9.6	8.5	9.0

* - (terminal payment + dividends)/investment

a – pairs denoted by a differ at a level of significant below .05 [Mann-Whitney U = 45.000; Z = -2.264; p = .023]

b – pairs denoted by b differ at a level of significant below .05 level [Mann-Whitney U = 25.5; Z = -2.291; p = .019]

The first category are those who still hold their shares and may yet exit profitably (less than 10 years old). In terms of performance as measured by exit, these are referred to as having the *Potential to Exit Economically*. The second category now includes angels who classified their investments as living dead *and* those who currently hold their investments more than 10 years. The third category is a collapsed combination of investments that closed voluntarily and are bankrupt. These two categories, write-offs due to bankruptcies, voluntary closures, investments aged more than 10 years, and the living dead are *Uneconomic Exits*. The fourth category is the combination of the remaining five potentially profitable exits which are referred to as *Economic Exits*. This term implies that a potentially profitable exit route was employed regardless of the weight of the return achieved.

This collapsed categorisation makes important distinctions easier to view. For the first investment, one-time angels held equal proportions of *Potential for Economic Exit* investments (50 percent) as *Uneconomic Exits* (total of 50 percent). First-time business angels also held 50 percent of *Potential for Economic Exit*, but split the remainder between bankruptcies and closures and *Economic Exits*. The number of habituals' first investments is larger. Habitual angels' first investments include 20.7 percent currently holding shares less than 10 years old, combined *Uneconomic Exits* of 48.2 percent, and sales of shares to entrepreneurs, other parties, venture capitalists, trade sales and IPOs of 31 percent.

The mean age for the first investment was greater than those of the second, third and fourth which may explain why greater percentages of angels were still holding their shares, and fewer percentages of angels' investments had gone bankrupt or closed. The means for the ages of the second, third and fourth investments indicate that they were similar (9.6, 8.5 and 9.0 years old respectively), thereby providing less time for subsequent investments to have gone bankrupt, closed, become living dead, or get old.

The greater proportion of novices who still held their shares compared to habitual angels may have occurred because novices' investments were more recent than habituals' (as evidenced by the ages noted in Table 7-2). This may have occurred because the angels were identified via new firm incorporations. Habitual angels have had more time to make numerous investments and to allow them to age, whereas some of the novices may be relatively new to informal investing along with more aged novices. The mean number of years since the investment for novice and habitual angels is significantly different for both one-timers and habituals, and first-timers and habituals as well. Some habitual angels were on their fourth investment by the time they were identified and surveyed. A further inspection of the data showed only 8 percent of novices were aged more than 7 years, whereas 69 percent of habituals' first investments were aged more than 7 years.

For subsequent investments by habitual angels, the proportion of those holding their shares less than 10 years generally increases, while the combined, *Uneconomic Exits* generally decline (from 48.2 to 39.2 to 20 and 20 percent respectively). *Economic Exits* decline for second investments, but gradually increase to the level of the first investment by the fourth investment. For this sample, habituals' subsequent *Economic Exits* never surpass their first investment performance. In fact, second investment performance drops precipitously. If habitual angels achieve some success on their first investment, it is possible that hubris causes them to invest more recklessly on the second investment and subsequently have much poorer results as measured by exit.

Regarding subsequent exit performance, the increased number of shares still owned by habituals can be accounted for by more recent investment ages for subsequent investments. Similarly, the decreasing total of investments in the *Uneconomic Exit* category may be accounted for by the more recent second, third and fourth investments, although it is possible

that habitual angels learn to select investments with a decreased likelihood of going bankrupt or closing, and will improve the performance of their lifetime private equity investment portfolio. Because of the small number of novice angels, and the small numbers in some categories, chi-square analyses were not possible.

Categorising Exit Data into Dichotomous Variables

For an exit analysis, the modest sample size and large number of share holding categories are reorganised. In this reclassification, *Potential for Economic Exits* are ignored since they do not yet represent an exit. The two categories in *Uneconomic Exits* are combined into one category (coded 0) and *Economic Exits* remain unchanged (coded 1). Table 7-3 presents this data for the four investments as well as the breakout of novice and habitual angels’ first investments.

Table 7-3 - Uneconomic and Economic Exits by Cohort and Investment

	1 st Investment			2 nd	3 rd	4 th
	One-Time	First-Time	Habitual			
N	2	4	23	16	7	5
Uneconomic Exit (%)	100.0	50.0	60.9	68.8	28.6	40.0
Economic Exit (%)	0.0	50.0	39.1	31.3	71.4	60.0

In total, 62.1 percent of first investments exited uneconomically and 37.9 percent of first investments exited economically. The two one-time angels who had exited did so uneconomically. First-time angels and habituals had large proportions of uneconomic exits (50 and 60.9 percent respectively) for their first investments.

As has been observed in other analyses, the second investment seems to be an aberration for habituals. Habitual angels' subsequent uneconomic exits increase after the first investment, but then decline. Alternatively, the rate of economic exits on subsequent investments by habitual angels dips to 31.3 percent at the second investment (39.1 percent) and then generally increases in this sample. Non-parametric McNemar and Cochran's Q (related samples frequency tests) tests were applied to the frequencies in Table 7-3. No statistically significant results were identified.

7.2.2 PCA Generated Appraisal Components and Exit Performance

In the previous sub-section, the share status, number and quality of exit opportunities executed by novice and habitual business angels were described. This sub-section begins the examination of the relationship between business angels' appraisal qualities and their investment performance as measured by exit using methods similar to those employed in Chapter 6.

Table 7-4 displays the means, standard deviations and t-test significance levels for economically and uneconomically exiting business angels for each of the appraisal qualities derived from the previous analysis. Uneconomically exiting angels in this sample demonstrated negative component score means (-.117) with respect to the *Community Consciousness* motivation and economically exiting angels were even more negatively disposed (-.286) towards displays of *Community Consciousness*. The *Finance* motivation indicated small negative tendencies by the uneconomic exiting angels (-.070), whereas economically exiting angels were significantly more disposed towards financial motivations (.694) [$U = 51.00$; $Z = -2.158$; $p = .031$]. This finding supports Hypothesis 9 that suggests that business angels who place higher levels of importance on financial motivations will achieve improved levels of performance over those who place a lower level of importance on

financial motivations. *Sporting* qualities were mildly associated with economic exits in this sample (.206) and uneconomically exiting angels had a negative *Sporting* component score mean (-.109). The lack of significance regarding the *Community Consciousness* and *Sporting* motivational component score means indicates there is no support for Hypothesis 10 which suggested that higher levels of importance placed on non-financial motivations would result in decreased performance.

Table 7-4 – Comparison of Appraisal Qualities by Type of Exit

Appraisal Quality	Exit Type	n	Mean Component Scores	Std. Deviation
Motivations: Community Consciousness	Uneconomic	18	-.1171	.941540
	Economic	11	-.2864	.640566
Finance	Uneconomic	18	-.0702 ^a	.980537
	Economic	11	.6939 ^a	.792026
Sporting	Uneconomic	18	-.1094	1.014635
	Economic	11	.0257	1.129143
Deal Search: Active Seeker	Uneconomic	18	-.0406	1.080394
	Economic	11	.0124	.770545
Sought After	Uneconomic	18	.0620	1.063182
	Economic	11	.2221	.866795
Go-Between	Uneconomic	18	-.3275 ^b	.674364
	Economic	11	.8060 ^b	1.413361
Heuristics: Representativeness	Uneconomic	14	1.07	.997
	Economic	10	.80	.789
Overconfidence	Uneconomic	18	.1556 ^c	.39589
	Economic	11	-.2545 ^c	.15076

a – pairs denoted by ^a differ to a level of significance below .05 using Mann-Whitney U test

b – pairs denoted by ^b differ to a level of significance at .01 using Mann-Whitney U test

c – pairs denoted by ^c differ to a level of significance below .01 using Mann-Whitney U test

Uneconomic angels, who have negative mean component scores for the deal generation technique of *Go-Between* are significantly less likely to exit economically. Those exiting economically have a *Go-Between* component score of .8060 whereas uneconomically exiting angels have *Go-Between* mean component score of -.328 [U = 44.00; Z = -2.474; p = .012]. Both uneconomically and economically exiting business angels in this sample have positive

values for *Sought After* component scores. Uneconomically exiting angels have a weak positive inclination (.062) and economically exiting angels are more so (.222).

Uneconomically exiting angels in this sample displayed a negative tendency towards *Active Seeker* deal generation tactics (-.041), whereas economically exiting angels had a mildly positive disposition (.012). The lack of any significance between actively seeking deals and economic exits places question marks on the viability of this practice.

In this sample, those angels exiting uneconomically employed more of the heuristic *Representativeness* (1.07) than those exiting economically (.80). The results are in the hypothesised direction, however, they are not significant and Hypothesis 12 is not supported. Hypothesis 12 indicated that angels who use representativeness will not perform as well as those who make use of statistical reasoning. *Overconfidence* (.1556) was displayed by those whose first exits were uneconomical and under-confidence typified the economically exiting angels (-.2545). The overconfidence results were significant below the .01 level [$U = 26.00$; $Z = -3.345$; $p = .001$]. This finding supports Hypothesis 13 that suggests that business angels exhibiting overconfidence perform more poorly than those characterised by under-confidence. The caution exhibited by under-confidence, which may be manifest in careful due diligence and thoroughness of preparation, is rewarded with improved exit opportunities.

7.2.3 Regression Analysis of Appraisal Qualities and Exit Performance

As noted in Chapter 6, influences between variables change the nature of our understanding from earlier bi-variate analyses. To illuminate these influences, controlled multi-variate analysis is necessary. Logistic regression is employed at this stage of the model's development because the dependent variable is dichotomous – exiting economically or exiting uneconomically – and one of the independent variables is categorical (Hair et al., 1998).

Logistic regression handles categorical variables and variables that have non-normal distributions better than discriminant analysis. The independent variables are the eight appraisal qualities. This sub-section proceeds with a discussion of the control variables, a discussion of the correlation chart, and the results of the regression

Control Variables

In an effort to build a model that is internally consistent, the control variables used in this segment of the research should be related to those which were identified for the regression in Chapter 6. Since this regression investigates performance as it is influenced by appraisal qualities, *Entrepreneur at the time of the investment* is used as a control variable. The large proportion of entrepreneurs in the business angel population makes an entrepreneurship-related variable an important influence in the variate. Similar to the regression in Chapter 6, an entrepreneurs' viewpoint at the time of investment may have influenced their decision compared individuals who were not entrepreneurs at the time. Much like formal venture capitalists have more information about negotiating venture capital agreements because of their prior history, entrepreneurs who have already started ventures and currently entrepreneurially engaged are more likely to have knowledge about exit matters²⁹.

Unlike the controls in Chapter 6, neither *Percentage of net worth available for informal investments* nor the *Number of years since first investment* were used as control variables in this regression. The amount of money the angel currently holds for future private informal venture capital investments is a current event which would have had no bearing on the success of the initial investment. Similarly, the years that have passed since the investment

²⁹ The number of entrepreneurial ventures started over an individual's lifetime is likely to reflect their comprehension of investment transactions and exit events, and one would expect, their ability to foresee investment exit opportunities and take advantage of them. The number of *start-ups engaged in as the entrepreneur* was used as a control variable for another version of this regression analysis. That regression produced results in of the same direction and magnitude as the current control variable except the coefficient on the control variable was negative.

was made is simply a reflection of the number of years the angel has been in the business. It would have had no bearing on the success of the initial investment.

Correlation Matrix

While the dependent variable has changed in this regression, the independent variables have not. The correlation matrix from Chapter 6 can be used for this part of the analysis as the variables in the current regression are all included in Table 6-20 on page 289. The comments related to that Table apply here as well. Comments regarding multicollinearity in that discussion were related to the two control variables that are not included in this regression as noted above.

Regression Results

The number of observations is smaller than the previous regression so the models presented include three or fewer variables to ensure the minimum of five responses per variable which is suggested for statistical comfort and economy of the variate. Table 7-5 provides the beta regression coefficients for the control variable and each of the appraisal qualities using an enter method. Positive coefficients indicate an increased likelihood of effective exit. As a non-linear regression, the coefficients do not represent the marginal effect, however, regression coefficients indicate the direction of the effect on economic exits which is suitable for an exploratory analysis such as this one. Variables remained in the regression if they were significant, contributed to improving the significance of the model, and if they improved prediction. Variables were introduced into the model using an enter procedure. Similar parameters are included as per the logistic regressions in Chapter 6 such as the number of observations per model, $-2 \text{ Log Likelihood}$, Nagelkerke R-Square, chi square statistics, degrees of freedom and the significance of the model chi square statistic. Classification table percentages are also presented in the last row; the total figures are presented first and the breakdowns between the two dependent variable categories are presented at the bottom of

each cell. All the independent variables are continuous except for *Entrepreneur at time of investment* which is a categorical variable (1=entrepreneur at time of investment).

Table 7-5 Logistic Regression: Uneconomic Exit and Economic Exit (First Investment) Dependent Variable: Economic Exit coded as 1

	# 1	# 2	# 3	# 4	# 5	# 6	# 7	# 8	# 9	# 10
Entrepreneur at the Time of Investment (cat)	.056	.142	.214	.387	-.014	.175	.254	.365	.645	.327
Motivation:										
Comm. Consciousness	-.251									
Finance		1.211*							1.874**	1.850**
Sporting			.140							
Heuristics:										
Representativeness				-.341						
Overconfidence					-8.491***				-12.936**	-14.615**
Deal Generation:						.052				
Active Seeker										
Sought After							.198			
Go-Between								1.562**	1.316	
n	29	29	29	24	29	29	29	29	29	29
-2 Log Likelihood	38.192	33.120	38.301	31.844	26.441	38.423	38.202	29.545	14.567	18.064
Nagelkerke R-Square	.014	.230	.009	.042	.463	.003	.014	.361	.765	.688
Chi Square	.304	5.376	.195	.757	12.055	.073	.294	8.951	23.929	20.443
df	2	2	2	2	2	2	2	2	4	3
Sig.	.859	.068	.907	.685	.002	.964	.863	.011	.000	.000
Predicted % Correct:	62.1	75.9	62.1	58.3	82.8	62.1	62.1	75.9	89.7	82.8
Uneconomic Exit	100.0	88.9	100.0	78.6	83.3	100.0	100.0	83.3	94.4	88.9
Economic Exit	.0	54.5	.0	30.0	81.8	.0	.0	63.6	81.8	72.7

The model-building process begins on the left side of Table 7-5. When controlled for entrepreneurship, financial motivations are positively related and weakly significant (# 2). This provides weak support for Hypothesis 9 which suggests that angels who place a higher level of importance on financial motivations demonstrate improved performance. The motivation *Community Consciousness* and *Sporting* have coefficients work in opposite directions and neither are significant. Hypothesis 10, which indicates that non-financial motivations cause poorer performance, is not supported.

All of the deal generation techniques have positive coefficients for effective exits. The intermediated technique referred to as *Go-Between* is significant (#8). This lends support to Hypothesis 11 that suggests that angels who are receptive to unsolicited proposals will out-perform those who are not receptive to unsolicited proposals. The effect of this strong support is moderated by the *Sought After* variable as it also represents unsolicited deal generation and *Sought After* is not significant (#7). Thus, it may be said that being receptive to unsolicited deals from entrepreneurs and their friends (*Sought After*) cannot be said to be an indicator of performance when controlled for by entrepreneurship, however, receiving deals from intermediaries, entrepreneurs' acquaintances and joining investment clubs (*Go-Between*) is a predictor of performance.

The heuristic *Representativeness* has a negative coefficient to exiting economically (#4) in this sample which is the appropriate direction to support Hypothesis 12, however, the results are not significant in the controlled model. There is no evidence to support the hypothesis that business angels who make use of representativeness do not perform as well as angels who make use of statistical reasoning. *Overconfidence* has a large negative tendency to exiting economically which is significant below the .01 level (#5). Thus, Hypothesis 13 which indicates that angels who exhibit overconfidence exhibit poorer performance than angels who exhibit under-confidence is supported.

In combining the significant variables, variate #10 represents the most parsimonious model that predicts 82.8 percent of the exits, is significant below the .01 level and in which the independent non-controlled variables are significant. In #10, *Finance* is significant and positively related to economic exits, and *Overconfidence* is significantly negatively related to economic exits. *Go-Between* was not significant in the four-variable model (#9) and was expunged from the overall model. If the continuous independent variables are interpreted as to their marginal effect on the probability of an effective exit, a one-unit increase in the finance motivations increases the probability of an effective exit by .435 or 43.5 percent at the mean probability. If the overconfidence variable increases by one unit, it decreases the probability of an effective exit by 3.440, or 344 percent at the mean probability.

7.2.4 Summary and Discussion

A summary of the findings regarding angels' ability to exit are as follows:

- The largest proportion of business angels were still holding their shares at the time of the survey.
- About 10 percent of first, second, and third investments were more than 10 years old.
- Sixteen (16.3) percent of the business angels in this sample exited in a manner that produced returns ranging from multiples of 1.04 to 6.29 times investment value³⁰.
Some of these successfully exiting angels have exited successfully more than once.
- In this sample, angels appear to learn how to exit economically after the first investment because the rate of exit performance for habitual angels drops after their first investment and only recovers at the fourth investment.
- Economically exiting angels are significantly more disposed to financial motivations in the PCA analysis and in the controlled multi-variate analyses.
- Overconfidence is significantly negatively associated with exiting economically in the controlled multi-variate logistic regression.

³⁰ Recall here, that some angels reporting favourable returns did not include the details in their surveys rendering their data unusable.

- The deal generation variable *Go-Between* is significant in the PCA analysis and as a single independent variable in the controlled multi-variate analysis. Economically exiting angels are highly disposed to it whereas uneconomically exiting angels are negatively disposed to it.

A large proportion of business angels exit from their first investment unprofitably. On the other hand, 37.0 percent of business angels who reported their detailed returns data had profitable exits from their investments. Novice angels' investments are significantly younger than habitual angels first investments which is to be expected since, having made several subsequent investments to qualify them as an habituals, means habitual angels' first investments were made longer ago. In Table 7-2 it was observed that the average age of one-time (and first-time) novice investments is very low (these investments are relatively young). This means the novice investments are relatively recent suggesting that -- given enough time -- most novices ultimately become habituals. If novices did not ultimately become habitual angels, then the mean age since their first investments would expected to be older. If this is the case, there would be important implications for research methodology since capturing older investments may be likely to identify only those angels who have become habituals, thus reducing the potential for understanding possible heterogeneities.

The rate of investments where shares are held longer than 10 years differentiates informal venture capitalists from formal venture capitalists who have to write off their old investments or disburse shares when the funds' fold. The persistent rate of investments which are old (10 percent) likely represent uneconomical exits for most informal investors. Even if they do exit, the rate of return may be very low. The IRR for an investment which paid double in 10 years is 6.5 percent and declining precipitously per annum.

The completion of this section of the model shows that there are some appraisal qualities that are associated with exiting economically. Financial motivations, an absence of

overconfidence (both in the controlled multi-variate analysis), and the positive presence of intermediation, introductions and investment clubs (in the non-controlled bi-variate analysis) have a strong showing.

The strong relationship between business angels citing financial motivations and exiting economically strengthens the information argument that those who possess greater quantities of information (about informal investing, industries, entrepreneurs, risks and so on) assume financial motivations that are rewarded by successful investment performance. This highly intuitive finding is heartening since it is the first quantitative reassurance of the skills of the financially astute from the perspective of a business angel. The lack of any significance related to the poor performance of non-financial motivations only serves to indicate that the performance results of angels citing community or sporting motives is highly variable and home runs are possible. Additionally, the emergence of these components warrants further analysis into the performance of those angels who demonstrate altruistic and sporting motivations. As a cohort, the nature of their activities and the possible complexity of their decisions suggests enlightening subjects for future studies of heterogeneity.

The positive relationship between *Go-Between* (the intermediary, investment clubs and introductions by acquaintances of entrepreneurs) and exiting economically is another reassuring quantity that has been referred to by angels and is vindicated here. Business angels have been citing this method of deal generation since studies were first conducted in the area. Intermediations by informants and acquaintances should be well received by business angels because of the promise informants have to identify potentially profitable deals. It also suggests that further analysis is warranted into the manner in which deals are sought as it may be impossible for active deal generating angels to source the best potential deals in the inefficient marketplace unless they are receptive to the solicitations of others.

The deal generation findings indicate that there are some deals that may never have been identified had the angel not been receptive to the solicitations of others. Information searches that combine “receptivity” to the suggestions of others improves the quality of the deal search process. Angels should be receptive to solicitations from intermediaries and acquaintances of entrepreneurs and be receptive to investment clubs. The fact that those who relied heavily on the advances of entrepreneurs and their friends did not demonstrate any significant relationship with exit performance suggests that, in and of itself, this is not a satisfactory method to generate deals.

The significant negative association between overconfidence and performance indicates that overconfident angels produce less effective performance results. The thoughtful assessment of large quantities of information cannot be replaced with over-optimistic assessments or enthusiastic endorsements implied by overconfidence. These findings add to the development of a separate identify profile for business angels. This is particularly insightful since entrepreneurs and formal venture capitalists were assessed to be quite overconfident.

The emergence of these appraisal qualities as indicators of performance is especially valuable in light of their importance in the earlier analysis of novice and habitual behaviour. The fact that both surfaced as indicators of habitual behaviour as well as investment performance indicates that deal generation qualities and heuristics are important appraisal qualities to predict behaviour and results. More effort devoted to these appraisal qualities may provide better predictive possibilities and inferences. Furthermore, the strong showing of cognitive tendencies indicates the potential value of emphasising cognition in future studies, as is the case in the entrepreneurship literature now. The case studies in Chapter 8 will shed more light in this area.

7.3 *Performance as a Determinant of Habitual Behaviour*

The remaining section of the three components in the informal venture capital industry model is the link between the performance of business angels' investments and their inclination towards habitual activity. This section considers Hypothesis 14 which indicates that, unlike their formal venture capital counterparts, habitual angels are not bound by reputation capital to raise additional funds for re-investment and are therefore hypothesised to have no reliance upon investment performance in order to re-invest. The basis for this argument is their reliance on their personal sources of funds and their penchant for supporting investments for non-financial, as well as financial, motives. This section conducts a bi-variate and multi-variate analysis of the relationship between performance (as measured by exit) and repeat angel investment behaviour.

7.3.1 Bi-variate Results of Performance and Habitual Behaviour

Table 7-3 on page 313 shows the frequency results of the angels who achieved economic and uneconomic exits by novice and habitual cohort. In sum, novices exit uneconomically 75 percent of the time and habituals exit uneconomically in 60.9 percent of the cases. The small number of novices presents difficulties with chi-square tests as a number of cells always have an expected count of less than five. Hypothesis 14 cannot be tested on this basis.

7.3.2 Multi-Variate Results of Performance and Habitual Behaviour

A multi-variate analysis is investigated using a small number of independent variables.

Logistic regression is pursued since the independent variable is dichotomous (novice or habitual behaviour) and two of the independent variables are categorical. Logistic regression is the most appropriate method in these circumstances as discussed earlier in Chapter 7 and in Chapter 6. The section proceeds by discussing the control variables, the correlation matrix and the results of the regression.

Control Variables

The control variables are the same as those that are used in the earlier section of the model (Chapter 6) where entrepreneurship, net worth and the amount of time since the investment had taken place were considered. The control variables are the same here as they were in Chapter 6's multi-variate analysis because the dependent variables are the same. A review of the rationale for these can be found starting on page 285.

Correlation Matrix

Novice and habitual behaviour and the economic exit variables are categorical dichotomous variables and are thus not part of the correlation matrix. The remaining variables, *Years since first investment* and *Net worth available for future informal investments* are in the correlation matrix found in Table 6-20 in Chapter 6 on page 289.

Regression Results

The logistic regression to predict habitual behaviour based on a small number of control variables and the success of a previous exit is shown in Table 7-6. The control variables alone account for 75.8 percent of the correct predictions (#1). This variate is significant although only one of the variables is significant. The addition of the dichotomous, independent variable, *Economic exits*, does not produce a significant variate, nor are any of the independent variables significant. This supports the null Hypothesis 14 which indicates that business angels' future habitual behaviour is not predicted by previous investment successes or failures.

**Table 7-6 Logistic Regression Beta Values: Novice and Habitual Behaviour Dependent Variable:
Habitual Coded as 1**

	#1	#2
Entrepreneur at Time of Investment (0)	-1.071	-.203
Net Worth	.115	.025
Years Since First Investment	.229**	.270
Economic Exit (0)		2.146
N	33	22
-2 Log Likelihood	29.078	15.180
Nagelkerke R-Square	.450	.362
Chi-Square	12.932 ***	5.682
Df	3	4
Predicted % Correct	75.8	86.4
Novice	54.4	25.0
Habitual	86.4	100.0

#1 – Variate demonstrates the influence of the control variables alone

#2 – Variate demonstrate the influence of the control variables and the other explanatory variable

7.3.3 Summary and Discussion

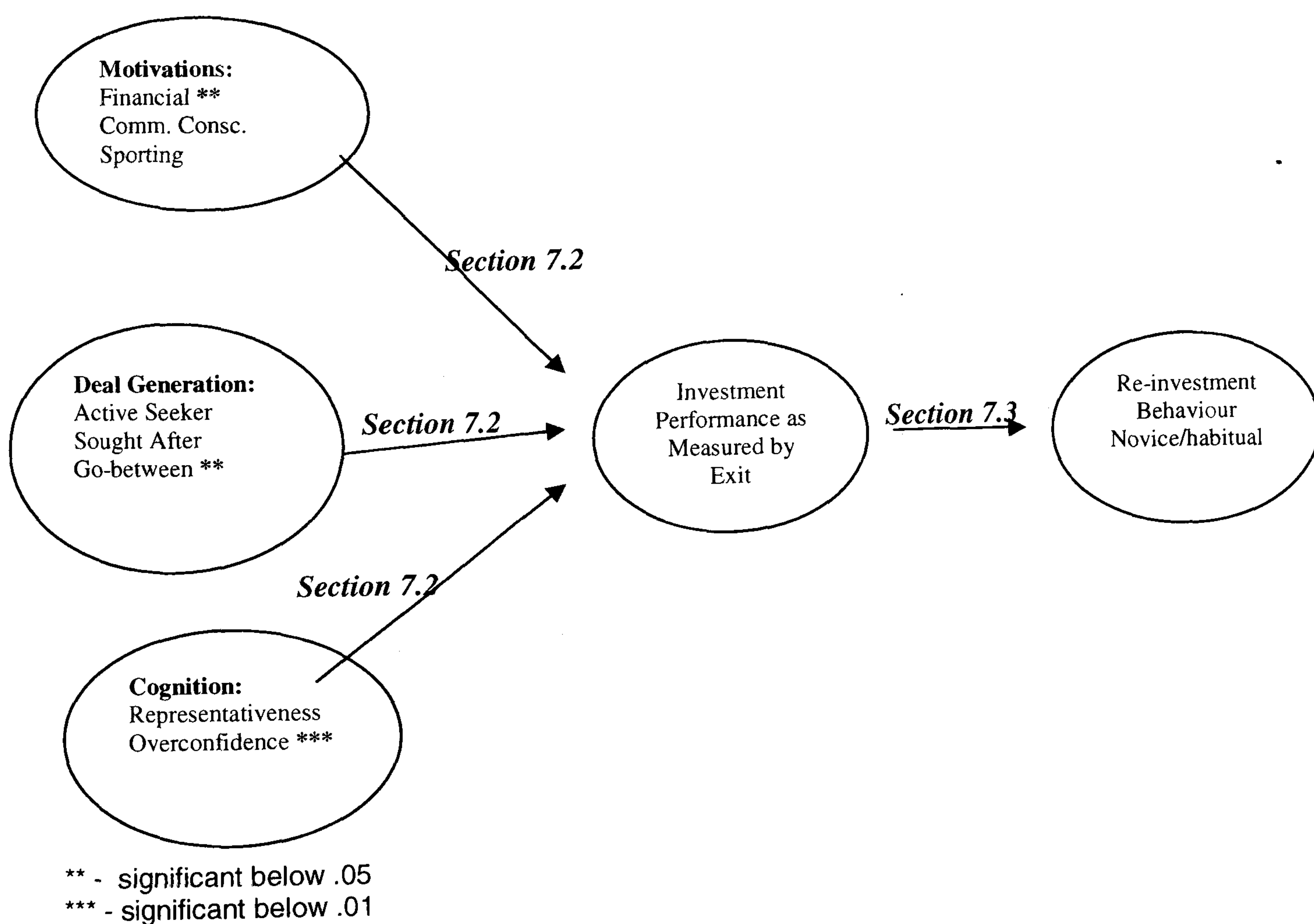
This section focussed on whether successful exits predict repeat investment behaviour in business angels. The null hypothesis was proposed and success of previous investments was hypothesised to have no effect on business angels' repeat investment behaviour. No significant relationship was found between business angels' performance on their first investment and their inclination to re-invest.

Business angels do not require a pattern of successes to continue to re-invest as their formal venture colleagues must. A variety of situations may dispose angels in this way. Their investment amounts are small, they have diverse motives and the need for to develop well-known reputations is unnecessary. The small investment amounts spells an individuality of action that may dispose angels to re-investing regardless of the previous outcomes. Providing they have the net worth to continue to re-invest, they can because of the relatively small amounts of finance they provide. Furthermore, angels' diverse motives bias them to yielding to investments that are uneconomic, but their non-financial motives are immaterial if

financial success is not their key motive. Lastly, because they do not need to raise funds, poor performance is irrelevant to future investment inclinations.

The results of Chapter 7 indicate that some appraisal qualities are predictors of performance as measured by exit, and that successful exit performance is not necessary for business angels to engage in habitual activity. The model of the outcomes from this chapter are presented in Figure 7.2. The fact that the qualities that are emerge as significant in Chapter 6 are similar to those in Chapter 7 provides support for the robustness of the findings and interesting implications for the research overall.

Figure 7.2 - Results of Appraisal Qualities, Investment Performance and Re-investment Behaviour



7.4 Summary of Quantitative Results

The logistic regressions in Chapter 7 indicates that financial, overconfidence and intermediary/informant are associated with successful performance. Financial and intermediary/informant were both positively associated with successful performance as measured by exit, and overconfidence was negatively associated with successful performance. The second regression confirmed the null hypothesis that successful performance is not closely associated with re-investment. The results seem reasonable. The qualities that affect performance have been alluded to in the literature though no direct links have been tested. Furthermore, the fact that re-investment does not hinge on successful performance is evidenced by the large estimates of informal venture capital present in the marketplace.

A summary of the 14 hypotheses and their detailed results follows in Table 7-7. This table outlines the hypotheses and their numbering in the first two columns. The three columns on the right indicate the primary types of analyses that were used to test different hypotheses (bi-variate analysis, principle components analysis, and logistic regression. Cells that have no entries were not tested using that method. The results of the tests indicated by an X are not significant, a small check mark (✓) identifies those that are weakly significant, and larger check marks (✓) indicate significant findings (< .05).

The multi-variate analyses (PCA and logistic regression) are more sophisticated techniques than the statistical tests used for bi-variate analysis and are therefore more compelling defining results. Hypotheses 11, 13 and 14 were significantly supported by controlled logistic regression. Logistic regression found weak support for hypotheses 5, 7, 8 and 9. PCA was used to identify weak support for hypothesis 4. All the other analyses conducted by PCA were superseded by controlled multi-variate logistic

regression. There was strong support for hypothesis 6 and weak support for hypothesis 2 using bi-variate analyses that were not superseded by a multi-variate technique. There was no support for hypotheses 1, 3, 10 and 12, and bi-variate support for hypothesis 12 was later invalidated by logistic regression techniques.

Table 7-7- Summary of Hypothesis and Results

#	Hypotheses	Bi-Variate	PCA	Log.Reg
Difference in Appraisal Qualities Between Novice and Habitual Angels (ex ante)				
1	Angels who go on to become habitual angels have stronger financial motives than do novice angels at the level of their first investment.	OT ✓	X	X
2	Habitual angels' financial motives increase with subsequent investments.	✓		
3	Angels who go on to become habitual angels view more proposals than novice angels at the level of the first investment.	X		
4	Angels who go on to become habitual angels conduct more pro-active deal generation activities than do novice angels at the level of their first investment.	H > OT ✓	FT > OT ✓	
5	Angels who go on to become habitual angels engage in more informant-driven (passive) deal generation behaviours than novices do at the level of their first investment.	X	X	✓ opposite direction
6	Angels who go on to become habitual angels conduct a greater variety of deal generation activities than novice angels at the level of their first investment.	H > OT ✓ FT > OT ✓		
7	Novice angels will manifest representativeness more than habitual angels.	OT > H ✓ N > H ✓		✓
8	Novice angels manifest more overconfidence than habitual angels.	X		✓ opposite direction
Association Between Appraisal and Performance				
9	Business angels who place a higher level of importance on financial motivations achieve improved levels of performance over those who place a lower level of importance on financial motivations.		✓	✓
10	Business angels who place a higher level of importance on non-financial motivations will demonstrate decreased performance compared to those who place a lower level of importance on non- financial motivations.		X	X
11	Business angels who are receptive to unsolicited proposals achieve better performance than business angels who not receptive to unsolicited deals.		G-B ✓ SA X	G-B ✓ SA X
12	Business angels who make use of representativeness perform more poorly than business angels who make use of statistical reasoning.		X	X
13	Business angels who exhibit overconfidence perform more poorly than business angels who exhibit under-confidence.		✓	✓
Association Between Performance and Re-investment				
14	Business angels' performance on their first investment does not influence their re-investment behaviour.			✓

GB Go-Between
SA Sought After

OT One-Time Novice
FT First-Time Novice
N Novice

✓ Significant below .05
✓ Weakly Significant below .10
X Not significant

8 Case Studies

8.1 Introduction

In this chapter, the quantitative data from the previous two chapters are supplemented with a small number of case studies of habitual angels. The case studies add context to the quantitative data and helps to interpret findings that may be easily misconstrued. The detailed sample selection methodology outlined in Chapter 5 contributes to external validity and the ability to generalise results. Introducing case studies for interpretative purposes contributes to internal validity so we may confidently interpret the results (Wiersma, 1991). The naturalness of the participants' observations and stories contributes to internal validity (Smith & Glass, 1987) particularly in cases where the sample size is small.

The purpose of the interviews was to gain more insight into the 'stories' that surrounded each investment that help explain not only what happened, but how and why the events took place. Information was gathered regarding the following themes: their motivations relative to each investment, the manner in which the angels tried to develop deal flow, attitudes regarding previous successes and failures as it related to their re-investment intention, and their exits and exit performance. Heuristics were not discussed with case study participants because most individuals are not familiar with the topic and would not be able to comment precisely. Their interpretation of their biases may be poorly considered. Secondly, the study contained no means to measure changes in heuristic use over a period of time. Thus, there was no way to measure changes.

This chapter proceeds as follows. The criteria and method for selecting the participants provides detail regarding the habitual angel interview selection process in the next section. This is followed by case synopses and quotes which provide a profile of each individual, each with enough depth to give the reader a feeling for their thoughts. The last section presents

observations and conclusions about the nature of the heterogeneity, appraisal and performance of habitual angels.

8.2 Case Study Participant Selection

Of the 43 business angels who had responded to the in-depth postal survey, eight angels were selected on the basis of their more prolific investment history compared to other angel respondents. Each of the angels selected had conducted at least four investments and had provided detailed data regarding three or four of the investments. Personal or telephone interviews could only be arranged with five of the eight candidates. One angel chose not to participate saying he was not the kind of person who was inclined to brag about his accomplishments. Two indicated they were receptive, however, they were never available for an interview in person or by phone. One of these corresponded at length, and where his comments are appropriate to the discussion, they have been included. Geographically, the angels were spread across the region from Saint John's, Newfoundland and Labrador to the south coast of Nova Scotia, a geographic spread of approximately 600 kilometres between the two furthest participants.

The interviews were open-ended and ranged between three-quarters of an hour to an hour-and-a-half in duration. Four interviews were conducted in person and one was conducted by phone to accommodate the angels' schedules. All were taped. Personal interviewees appeared comfortable talking about their investment efforts and freely referred to situations, personalities, and names. The only business angel to be interviewed by phone responded factually and precisely, but seemed reluctant to weave the minutiae of the investments during discussion. The difference was attributed as a possible consequence to the phone acting as a barrier. All business angels were notified that their names, the names of other personages involved, and the investees would remain confidential. They are referred to by fictitious

pseudonyms. Provinces are not revealed since references to specific occupations or types of deals in certain locations could disclose the angels or investees.

Table 8-1 presents some of the key characteristics of the angels participating in the case studies. Profiles of the angels are supplemented with details of their investments taken from the detailed postal survey.

8.3 Case Studies

In this section, the broad research areas are addressed in the context of each angel's investment history. Some individuals discussed investment events in detail whereas other business angels were more vague on details. Whether deliberate or not, those who were more vague tended to focus on their investing philosophies and recipes for investing. Thus, the case studies vary in the depth regarding the themes presented.

8.3.1 Mr. V

The first case study is a lawyer in a major city in the region who specialises in insolvency and who also conducts business in real estate merchant banking. In addition to his legal responsibilities, Mr. V exercises his entrepreneurial flair as a significant investor/lender in the real estate industry by arranging mezzanine, high interest loans and equity real estate investments for developers. Regarding these business interests, he says, "I align myself with people who are great managers of real estate. I don't run it." His business extends to finding real estate investment options for wealthy parties seeking diversification from either the stock market or income asset allocations. In the heuristic analysis of the in-depth survey, Mr. V displayed both statistical and representative reasoning and was slightly under-confident.

Table 8-1 - Case Study Participant Investment Characteristics

	Profession	Interview Method	Total No. of Lifetime Investments	Year of First Investment	Intention to Re-invest & Reason
Dr. J	Psychiatrist	Personal Interview	4	1986	No – “Building for retirement”
Mr. F	Organisational Consultant – Semi-Retired	Personal Interview	4	1985	Yes – “For risk adjusted returns and fun”
Mr. P		Correspondence	25+	1978	No – “Investment in public co. less time consuming, less risky and better returns. Minority (VC) investments in start-ups or relatively new companies seldom work out for the investor even when the business is successful!!”
Mr. S	Entrepreneur	Telephone Interview	6	1982	No – “Building for retirement”
Mr. V	Lawyer & Property Financier	Personal Interview	5	1985	Yes – “Still a sucker”
Mr. W	Entrepreneur	Personal Interview	25+	1978	Yes – “ROI opportunities”

Mr. V has made at least six private equity investments outside of his legal practice and real estate financing activities. He describes himself as “interested in people, entrepreneurial activities and trying to make money.” Based on the interview held in his office, his deal generation methods rely exclusively on approaches made by entrepreneurs, their friends, and their acquaintances. He did not disclose any deal search activities that would constitute a proactive approach on his behalf.

His initial investment of \$40,000, in 1985, along with a small number of other investors, was made in a discount retail eyeglass operation. The principal (an optician) at the time was the contact who approached him and someone Mr. V knew well and four other investors were involved in the business as well. The objective of the business plan, at the time that he invested, was to vertically integrate into lens manufacturing. Mr. V made a follow-on investment of \$15,000, but the business ceased operations in 1988 when it went into receivership. The introduction of a significant new competitor was a crucial turning point. Mr. V’s assessment of the failure was that the entrepreneur was incompetent. He indicated that the same entrepreneur went into other businesses subsequently and met a similar fate. Mr. V hoped he would learn from previous experience. However, he noted,

I don’t have the personality that is once burned twice shy. If anything my appetite might have been whetted and I would have been keen on pursuing some entrepreneurial activity.

The second investment was a buy-out executed by a family friend along with a group of investors arranged by Mr. V. The friend was a funeral director and had been a long term employee of a large company which owned a significant number of funeral homes in the area.

They had decided they wanted to sell two of their locations and the family friend funeral director thought it would be a good opportunity and he came to me. Even though he had been in the business for a long time, he lacked the capital. I looked at it, put together a group and engineered a buy-out from the Houston, Texas company.

The seven or eight other investors involved were all friends, partners and relatives. Mr. V raised some bank funds to enable the manager to also own some equity. “He didn’t have any money. But I leveraged and got him involved. I’m a big believer that the manger/operator should also have an equity stake, not just sweat equity.” There was no exit plan in place at the time of the investment.

For this investment, the investors were more active in the financial, monitoring and on the advisory board. At the time, Mr. V had “confidence in the operator, who ultimately was not a good manager either.” Three years later, they received an unsolicited offer by a group that was attempting to consolidate the industry and Mr. V negotiated an exit paying double their investment.

The third investment was an Internet application of an employment and career placement business and Mr. V was approached by a well known entrepreneur whose wife had gone to school with him. He and his wife contributed \$30,000, but he described the investment as being “careless on my part – stupidity really – the person who I had lunch with was 50% owner in this business, and I hadn’t done any real due diligence. I mean I liked the manager.” A number of other prominent investors were involved in this investment as well.

In this case, the entrepreneur’s investment was leveraged against his shares in another venture which subsequently ran into trouble. When the other company failed, and the margin was called, both companies were in trouble³¹. Upon reflection, Mr. V thought,

“In that case, the manager was probably competent, but there were macro factors that caused the company’s demise. He formed a parallel structure and is continuing to operate, but obviously the bank is chasing the old company for the margin debt that was drawn against the other company’s shares.”

³¹ The entrepreneur, and some of the directors related to the other company, are currently under securities investigation for misleading investors.

Regarding the entrepreneur's selection of him, he said, "When we had lunch this deal was probably on his mind but it wasn't apparent at the time. In retrospect, this was probably the motivation for his invitation to lunch."

Mr. V took a minority and then majority position in a fast food business seven years ago for a total of \$500,000. The entrepreneur had a proven track record with the same franchise so they put together an investment group, got involved with the franchise, consolidated a number of others, and then built some more. Similar to Mr. V's other investments, however,

"the operator turned out to be incompetent at best. We had to eventually replace him. We had built up a massive overhead, we had controllers, significant middle-statement expenses and we were getting killed. So over the years, I had to get directly involved in higher management."

The operations are still ongoing,

"but I should have taken my first loss as my best loss. Instead, I choose to feed it, I got more involved, and I ended up dealing directly with the banks and making guarantees with the franchisor. And I'm still in it, we're down to two stores and one of them is not doing well. The other one we've managed to get a lot of debt off the balance sheets, so at some point there might be some recover."

Fifteen investors (including immigrant investors under the Immigrant Investment Program) were involved in this venture. Some were paid out, some whom were paid out at a discount, and some lost their investment entirely.

"There were millions lost in this little venture. We got rid of the general manager and the controller, and we now have in-store managers and an accountant who has her own business. Things are excellent now, but there's such a hole in the balance sheet that it would be very difficult to crawl out."

Observations

All of Mr. V's investments were brought to him by individuals with whom he was well acquainted. "It was always someone I knew well. I wouldn't have entertained someone off the street." Yet in the end, he finds all the entrepreneurs to be incompetent casting a cloud

over not only the entrepreneurs, but his own abilities to select deals with competent entrepreneurs.

“I’m a specialist lender to the real estate industry – that’s what I know a lot about and that’s what I should stick to... My own entrepreneurial activity is in real estate, and that subsidizes these other suckers.”

His self-deprecating comments about his abilities as an informal investor belie his considerable insight into his efforts over the years. He has considerable business knowledge and capacity to understand the nuances and details of the financial transactions particularly. It appears that a desire to entertain entrepreneurship in his activities is the motive for the investments in which he has engaged.

8.3.2 Mr. W

Mr. W has been a self-made entrepreneur and deal maker from his earliest years after graduating from Saint Mary’s University. In the 46 – 55 age category, he has lived in a variety of large cities across the country and now resides in a small town that is about a hour away from a city. Mr. W has participated in at least 25 private equity investments since 1978 and is still working on projects which he expects to net an ROI that will “range from 14 to 21 percent.”

Mr. W has participated with a large number of other investors over the years and is often the deal maker for the entrepreneurs who need the finance. Mr. W has been an entrepreneur in eight ventures and has bought two businesses. In a number of cases, Mr. W identified opportunities and presented them to individuals who he believed were capable of taking advantage of the market potential by starting the businesses. In these situations, he became an investor in a market opportunity with an entrepreneur which had been fashioned by him.

In addition to a strong inclination towards financial gain, and a strong disinclination away from fun, excitement or altruistic motives, he noted other motives including the desire to

develop a continuous income. Mr. W displayed indications of both statistical and representative reasoning, and was slightly under-confident. Mr. W was one of the few respondents who spent significant time and effort searching for business opportunities by reading newspapers, joining investment groups, contacting boards of trade, suppliers and customers, reading trade reports, business journals, and business databases for potential opportunities.

While Mr. W did not go into detail about individual investments, his record of success has been favourable. He has had several losses, one of which cost him in the order of hundreds of thousands of dollars. The largest loss he attributes to the malicious intentions of the entrepreneur who Mr. W characterised as a crook who walked away from the venture having profited personally from Mr. W's investment. The willingness of an entrepreneur to pursue such an unproductive avenue was surprising to him and he now controls all of his investments with a tightly controlled contract that provides litigious options for misbehaving entrepreneurs.

Mr. W has developed a number of working principles that currently guide his investments. The most striking of these is his concern about exit timing. His rule of thumb about exiting informal private equity investments specifies harvesting his investment while the company is in the early growth phase. This way, there are generally several interested buyers including both the competition and the entrepreneur. This timing generally takes place in the first three to five years. Mr. W's rationale to exit as the company as it is gaining momentum facilitates a liquidity event before the investee reaches a stage where it has a requirement for additional capital. By waiting until the investee is at the height of its growth peak, the firm will need more funds and the expansion will take more time to unfold profitably. In his estimation, as an angel, it is more profitable to exit at the early growth stages since the time to harvest is often less than five years. The expansion stage can lag on for a decade, considerably reducing the return on the investment due to the time value of money.

Although Mr. W did not reveal much detail, he had clear deal search capabilities and initiative, as well as exit strategies that he attempted to execute with optimum timing. His motivations were purely financial, and he demonstrated a significant amount of success in his endeavours over the years.

Observations

Mr. W has clearly made a living for his family with his activities over the years and has demonstrated the most persistent pursuit of business opportunities of all of the candidates interviewed. He also appears to be the interview candidate that has learned the most from his informal investment activities. He has learned from his experiences with malevolent entrepreneurs and now uses contracts, and his numerous attempts at exit have taught him the optimum timing to exit to maximise ROI.

8.3.3 Mr. S

Mr. S is chairman and part owner of an employee-owned industrial operation located in a rural locale in the region. Mr. S and the employees engaged in a buy-out of the operation in the 1980s when the previous corporate owner decided to close the operation. This was Mr. S's first significant investment for which he held substantial managerial responsibilities. Mr. S demonstrates statistical reasoning (no representativeness) and is more under-confident than the previous two individuals. He is in the 56 - 65 year old age category and shows no inclination towards sporting or community consciousness motivations.

In the early 1980s, the Province of Nova Scotia permitted favourable long-term loans for those making private equity investments in young and growing firms under the Venture Capital Act of Nova Scotia. Non-interest bearing loans, matching dollar for dollar, were repaid to the Province when the investments were harvested, or in 10 years -- whichever came

first. Mr. S and four other investors made several investments under this arrangement. “We had some surplus cash, and wanted to diversify.”

Considered as a venture capital entity under the Venture Capital Act of Nova Scotia, they were listed in a directory sponsored by the Province and therefore received up to 15 business plans annually. Those were screened very quickly by Mr. S who acted as the lead evaluator for his small group of investors. Their criteria included a focus on manufacturing where they felt they could add value with their experience and create some synergy, and a location within 150 miles of their rural location (which would have included a city). The group made final investment decisions based on Mr. S’s evaluation. By 2003, the fund had only two remaining investors and then Mr. S alone.

In 1982, Mr. S recommended the syndicate make a \$100,000 investment in an electronics company previously unknown to him. The investee was introduced to Mr. S by an accountant who had helped him start the venture capital initiative, and who was retained by the investee as well. The accountant did not make the recommendation on a professional basis, but rather provided an introduction for the two players.

It was a matter of myself and the principal getting together, reviewing business experience, philosophy, history and then looking at what the program was. The accountant (who was party to most of the discussions) facilitated it with a few imaginative ways as to how it would be structured.

Mr. S was attracted to the start-up because of the technology, the experience of the principal, and the company’s track record “which was not great, but wasn’t bad. And at the end of the day we really came back to a feeling of comfort -- we did click.” The syndicate took 30 percent of the company’s stock in the transaction.

Twenty years later, the successful exit came in the form of a buy-back by the entrepreneur. From 1995 to 2002, the investment paid between \$50,000 and \$200,000 per year.

The company had a lot of hard years, but the last five it got on its feet. That was a feel good one all the way through... At the end, I couldn't make any more valuable contribution to the company. At that point I was nothing more than an investor, so it made sense for him to buy me out and for him to consolidate his position.

In 1983, a \$700,000 investment was made for 49 percent in a high tech, specialist machining manufacturing start-up. In that case, there were problems with the original entrepreneur who left the firm and a second executive was installed. The new entrepreneur and Mr. S's syndicate acquired and ran the business. Nova Scotia's offshore oil and gas industry was to be the primary market for the precision machining opportunity, however, the sector did not develop until more than a decade later. The investee was sold for \$50,000 in 1985, but it "didn't survive the sale. They were unable to transfer from one plan to another. Timing and the inability to transist (sic) from the originally targeted areas and from the original plan to viable alternate plans..." were the cause of the firm's demise.

In 1984, Mr. S's syndicate invested \$100,000 for 25 percent of a manufacturing firm and later placed an addition \$40,000 in follow-on funds. The same accountant introduced Mr. S to the principal whose pharmaceutical start-up had been in business about two years. Other investors were added after the initial investment, for a total of eight investors. Five years later, based on pressure from outside directors, the entrepreneur left the company.

"The principal couldn't transist (sic) to an appropriate directional role for the company as far as its future. He has subsequently started another successful company. He was a real entrepreneur, but not a long term manager ... At the end of the day it comes back to the principal their skill set, their integrity, their knowledge, capability and commitment. We looked at a lot of business plans, but at the end of the day its going to be the entrepreneur that makes it happen."

One of the investors has had to take over the company's operations, and today, the pharmaceutical manufacturer's prospects are good.

"It's in very different market today. The company has evolved as markets and opportunities have evolved. They have an excellent staff, a lot of expertise, and are considered the gold standard in the industry that they're serving ... It's a world wide leader in its field and we're still waiting to go public. The other investors are sharp and everyone's making a contribution and I'm pleased with that one. That's a feel good one. Even if it goes to IPO, it was a long wait."

In 1991, \$75,000 was invested for 40 percent of a firm that only lasted a couple of years. Mr. S described the firm as a reseller who decided to manufacture the products that they were reselling. Again, “the entrepreneur didn’t have the strengths to transist (sic) from a distributor to a manufacturer and to manage the business.” Mr. S and the remaining investors made two investments subsequent to that, one of which he is still holding and is doing well.

Observations

Mr. S is the model business angel who behaves in a manner much like that of so-called financial maximising investor in neoclassical economic theory. He actively pursues the identification of business plans, carefully reviews them, has established criteria, and has a variety of colleagues with whom to invest, he sits on the board of his investees, provides monitoring and oversight, and adds value to businesses. He has the knowledge and ability to exercise effective exit mechanisms.

8.3.4 Dr. J

Dr. J is a practicing psychiatrist in a major city in the region. His motives for informal investing were to produce returns, although in subsequent investments, Dr. J was motivated by tax benefits as well. His investments had nothing to do with the businesses, “It was never because I liked this business or that business,” he said. Although he never participated in oversight or monitoring, nor did he add value for the firms, he found the events surrounding the investment to be exciting and he liked helping aspiring entrepreneurs and knowing that he was helping to create employment in his community. Dr. J demonstrated a statistical reasoning mindset and was not particularly over- or under-confident in his use of heuristics. At the outset of his interview, he indicated some discomfort. “I feel a little guilty, because I don’t feel myself to be in any capacity -- anybody who has any business knowledge.”

His first investment was initiated by a relative who was “in touch with some people who were in the fish business.” After making his own investment, the relative came to Dr. J who invested from a distance. Looking for expansion capital in the fishery, the company did very well and Dr. J tripled his \$15,000 investment in three years.

“I exited when my relative exited. He felt the thing had gone as far as it was going to go and so he decided to get out and I exited. There was an agreed payback. It was a bit of a grey area, but we were all fine with it. The people involved didn’t even know I existed, I was at a bit of a distance.”

The company continued to prosper after Dr. J’s harvest, until the industry faced a downturn.

Dr. J lost a \$30,000 investment made in 1988. Though he felt the fortified concrete company had a lot of potential, the investee ran into cash flow problems.

“We were too far removed to have any input ... when it started to go into a little bit of trouble, we were too far away. The fellow I was involved with on the first one was involved... and a lot of other very good common sense type individuals. And the upfront money wasn’t that bad.”

When the call came for the third investment, Dr. J was not deterred. His third investment in a telecommunications firm, in 1992, was \$20,000 for eight percent of the firm. A government incentive matching dollar for dollar was involved in this investment and a group of informal investors syndicated to make the investment. During this investment, Dr. J appeared to come to an understanding of the monitoring and control rights demanded by effective oversight and contracting because those with whom he was involved were very much in control.

“What sold the third one after losing the second one was the actual people involved. There were some really good business people involved. ... Most of what I would call the good business people I know would make sure they had a 50 percent involvement. They don’t lose control.”

This investment had formal regular meetings which Dr. J found fun. “That was all brand new to me so I used to enjoy going ... presenting their year end statistics at the board meetings and annual meetings.”

Seven years later, the investment netted him \$220,000, an 11 times multiple.

“Had we hung in another year on investment, it would have made us \$3 - \$4 million dollars each (when the firm went public). We got out at \$2 or \$3 per share, and the actual company went to \$30. Some of the guys hung in there, but I had to get out for other reasons. We were happy enough with what we got.”

Dr. J holds a lot of respect for the referrer who brought the third deal to him. Although he expressed concerns about ever investing again, he hesitated when discussing this referrer.

“There’s some high tech stuff on the go – technology companies he happened to know -- nothing formal or official, but he’s starting to look at some of that stuff again. He’s probably got more money in the bank (than I do), I’m still not quite out of debt. I’m sure if he was involved I’d listen because I trust him in terms of his business acumen.”

Currently, Dr. J and a small group of friends have an investing group. “We put a little money in every now and then. It’s not a lot of money (\$10,000 each) ... its more to get together for a beer and a pizza. The juniors are more likely to give you a bigger return, but you’re also more likely to get a bigger loss.”

Dr. J’s final assessments are mixed even though he has two excellent successes, both with ROIs in excess of 40 percent.

“I’m generating money in a pretty high tax bracket; when that money it comes in as income you get hit, pretty hard. We set up the VC firm, it was a lot of meetings, it was a lot of work, and when the payback comes, that went to the company and over 50% of it went to capital gains. At the end of the day, although you did really well at it you’re still turning half of it back over to the government what actually came to me,”

Observations

Dr. J identified all of his investments via referrals and contacts by entrepreneurs. He has never engaged in any pro-active search at all. Neighbours, community members, lawyers and colleagues have all contacted him on occasion. In the past six months, he has been contacted twice.

In the beginning, Dr. J's lack of understanding of the entrepreneurial process and the potential for moral hazard and adverse selection are naïve. His experiences gained him only an elementary understanding of key elements required for successful private equity investing. This became obvious during a discussion regarding a patent he had pursued. In early 2001, he patented a golf putter (handled more like a hockey stick from a standing, front-facing position rather than the traditional putter which is a sideways stance over the ball).

"I needed an angel investor. I had a friend in Toronto who was promoting it, but after about six months he was spending a lot of time at it and so we would have had to come to an agreement. I approached some people here, and then I parked it. I spent about \$20,000 patenting it through a lawyer. It would have been a business where I could have used an investor... I think 90 percent of people with patents lose their money."

His reflections about his own investments stand in stark contrast to his understanding of the entrepreneurial process needed to develop, manufacture and market sporting equipment.

Later, Dr. J at least came to recognise the need for monitoring and control when he observed other investors exercising distinct patterns of governance. His attitude and motivations are "much more reserved now" now that he is closer to retirement, and some incentives that were formerly available are no longer in place.

"You throw this stuff over to other people and then you have absolutely no control over what happens once it gets going. I don't think I could handle the insecurity of that now. Unless it wasn't a lot of money, or unless it was a significant tax break ... there would have to be something to entice me to do that. My understanding is that stuff is not like it was 10, 15 years ago. It's not as easy to access venture capital, or ACOA money, tax benefits, capital gains, losses. All that stuff is not there anymore, at least to my understanding ... If you put money into a business that creates employment. There should be some reduction in your taxable income."

Dr. J indicated he would not participate in any more informal private equity investments because he no longer has enough time -- before retirement -- to make up for a substantive loss.

"I'm completely different than I was 10 years ago. I'm much more conservative. In terms of your age, you've got to watch your risk level. I'm probably less likely now to part with risky money than I was 10, 15 years ago. I think that's probably fair to say. I'm 50 now, so you don't want to balloon out any major debt."

The existence of debt also influences his future informal investment concerns.

“Age and debt are going to influence your perspective. When you get around 50 or so, you start looking at your debt more so than generating more income. I can remember thinking, if I lose this, in a few years I can generate a similar amount back. I don’t think like that now.”

Contrary to his own experiences, he is in a position to caution other physicians -- with whom he has a guidance role via his teaching responsibilities at a large a medical school– not to engage in informal private equity investment.

“Even though I’ve done a lot, I caution them against it because you turn it over (the funds) to people who really have a lot more expertise than you would ever have and it’s a bit risky when you do that. You throw it over there and have very little say I wouldn’t advise a graduating psychiatrist to do that. Even though I’ve done it. I tell them pay down your personal debt, maximize your RRSP and be very careful in terms of turning your money over to someone else to invest it. It’s not unusual for young physicians to see an opportunity to make lots of money, so then they don’t worry about their practices. Most times that doesn’t work out. When I first started my practice, I was looking for those kinds of opportunities because I had cash flow and was given opportunities to get in with a pretty good return. I don’t advise anyone to do that anymore.”

Upon reflection, however, he indicated that if the referrer who had introduced him to the company that ultimately went public came to him again with another investment, he would consider it. He respects the scouting talent of this individual and their ability to spot opportunity.

8.3.5 Mr. F

Mr. F is a male, aged 56 – 65, who came to this region, and this country, five years ago. Mr. F is a graduate of Princeton and Harvard Universities, and although he is semi-retired, the nature of his current consulting projects permit him to live anywhere. Thus, he has selected a remote, rural, scenic vista for his quasi-retirement and civic and professional work. Mr. F was an organisational management consultant to large corporations and specialises in business unit re-structuring and management compensation.

Mr. F's motives included strong inclinations towards financial motives as well as some sporting qualities. Community consciousness was not indicated as concerning him at all. Mr. F did not exhibit any representativeness in the study (two instances of statistical reasoning) and demonstrated some under-confidence. He had been an entrepreneur in two start-ups.

Mr. F indicated no deal search qualities other than recommendations made by professional financial advisors. He neither was sought by entrepreneurs regularly, nor did he activate any pro-active approach other than acting on his advisor's recommendation. In working with executives, Mr. F's firm provided professional financial planning. "Most executives in large corporations are too busy to manage their own compensation, and part of our offering was the services of a firm called Asset Management Group (AMG) in the US." While recommending AMG's services to the executives of the large companies to whom he was consulting (such as General Motors), he came to recognise the benefits of AMG for his own financial needs as well. AMG advised and made suggestions regarding mortgages, insurance, and deposits, as well as investments including private equity investments. Earlier, their services were provided as a part of his own compensation package, and in later years, he chose to continue to work with them on a fee basis.

AMG recommended all four of the private equity investments in which Mr. F had participated in the 1980's and 90's. All of the private equity investments took place in the US. The four investments made between 1985 and 1991 were each valued at \$25,000 and each was held for four years. Two of them were in the oil, computer business services. Mr. F readily noted that he received lengthy reports about the investments, both as advise, and later as investments, but he did not read them.

"The good news is they sent me superbly organised materials, the bad news is I never read them....I never did know as much about them as I should have, but I had faith in the recommender (sic) and I would have expected to get more interested in that field later had I not moved into a different tax environment."

Three of the investments' were very profitable while the other returned his money at an ROI "no better than a municipal bond."

He is still interested in informal investing for "risk adjusted returns and fun" and would devote 10 percent of his net worth for future private equity investments. More recently (while living in Canada), he has considered two angel-type investments. Both of these came to him by way of approaches from entrepreneurs. Admitting that finance was not his strong topic, he noted that he would be bereft of the assistance of AMG in helping him select local opportunities. "You would need to make sure you didn't put a number in the wrong place in calculating the internal rate of return." Anything he and his wife engaged in locally would require their own due diligence.

Observations

Mr. F accepted guidance of a financial intermediary and was motivated wholly by return on investment. He neither read the reports, nor selected the companies where his investments were made. He attributes his successful semi-retirement to their advice.

8.3.6 Mr. P

Mr. P lives in a major city in the region and has made "dozens of investments over the years."

He communicated by correspondence and was quick to point out that deal generation rarely takes place by business angels searching for deals.

"In reality, it is most often the reverse. Business tends to beget business – that is, one thing leads to another. Also, when you have made one such investment and it becomes known, there are generally many more proposals being offered from people you don't even know – so many indeed that it can become hard to keep saying no."

The contracting concerns associated with adverse selection and moral hazard are not lost on Mr. P, who is thoughtful about the subject. He notes that venture capital investors must rely on often complex legal agreements and fair treatment by the entrepreneur, or those holding

control. “In knowledge-based businesses, even the benefit of majority control ... can sometimes be of dubious value if those with the expertise (technical) simply get up and leave.”

Information asymmetries associated with private equity prompts Mr. P to the realisation that the quoted equity markets are more efficient given return per time and effort.

“... Investment in public companies offers far better odds (even in the present down market) with much less effort and hassle ... Financial reports and information from public companies is now far more reliable, on balance, than the statements and data which investee companies use to support their proposals.”

Having been aware of, or involved in, dozens of VC investments over many years, Mr. P’s assessment is that few “true VC” investments ever properly reward investors.

“The resale of shares from investee companies is extremely difficult within Atlantic Canada given the very small market base and pool of private capital. The absence of any real tax break for VC companies at present in Canada, the high costs of managing VC investments, and disproportionate risk of failure (or being unfairly treated by the investee company) far outweigh the prospect of success...The job of a true VC investor in Atlantic Canada is pretty much a difficult, thankless and often fruitless exercise.”

Observations

Mr. P is clearly an insightful investor who has attempted to add value, monitor and exit informal venture capital investments. The burden of deal generation is not that of actively seeking investments, rather his burden is in constantly saying no to investors who identify him as a potential candidate for finance. Mr. P is also disillusioned with the issues of moral hazard and has found the liquidity of exits to be too much of a problem to warrant further investment. At retirement, these are no longer investment interests he is willing to pursue.

8.4 Discussion

The qualitative interviews were intended to illuminate the re-investment process, thus case studies of habitual angels were identified. Eight angels were originally selected and five agreed to be interviewed. Another preferred to correspond regarding his views. The findings

are organised using the same research questions laid out in Chapter 1, and that were concentrated on empirically in Chapters 6 and 7. Commonalities and differences between different angels were sought.

This section begins by briefly reviewing the key highlights of the six participants.

Assessments of their appraisal qualities follow with comments regarding the nature of the appraisal activities. This is followed by assessments of the qualities that may have appeared to influence their success (if any). The necessity for success in order to re-invest is next. Observations about learning and the conclusions from the analysis conclude this section.

8.4.1 Overview of Angels

Mr. W operates from a highly informed position. He understands growth and financing cycles and the unique difficulties management teams can encounter. His information regarding investment exits is sufficiently enlightened that his exit expectations are better served by exiting early. As his investments are principally income earning efforts, he intends to re-invest.

Mr. P also operates from a highly informed position recognising that the adverse selection and moral hazards of such investments are difficult to reconcile even with elaborate contracts.

After four investments he would rather invest in the quoted equity markets where the provision of information is highly available. He finds it hard to say no to the entrepreneurial solicitations he receives. He has no intention to re-invest in the private equity market.

Mr. F and Dr. J are professionals who were content to receive referrals from individuals and organisations they respect. Both were highly financially motivated. Both of them had successes primarily, but advancing age, lack of capital gains relief and tax issues suggest they are no longer interested in re-investing in private equity investments at this time. Mr. F might re-invest, but Dr. J indicates not.

Mr. V favours entrepreneurial solicitations. He has suffered a number of large losses (as have other investors he recruited) which he has attributed to entrepreneurial incompetence. He does not appear to recognise that his appraisal methods may need remedial work. He describes his intention to re-invest as “still a sucker.”

Mr. S also favours pro-active deal generation having formed a small venture capital group and having solicited investment proposals. His group of investors made significant entrepreneurial interventions and he has had a good record of successes. He does not intend to re-invest as he is building for retirement.

8.4.2 Appraisal Qualities of Habitual Angels

By definition, all of the case study participants were habitual angels having made three or more investments. There are some strong similarities which are observed amongst the deal generation and motivational qualities³². Mr. F and Dr. J showed exceptionally strong financial motivations. This was evident in their stories as well as in their motivational scores displayed in Table 8.4.2. Interestingly, these two angels were the most detached from their investees. As two professionals, they were not involved in entrepreneurial endeavours as a part of their careers in any way and had no monitoring or governance roles related to the investees. Mr. W and Mr. S were clearly involved in private equity investment as a means of income production. They were both highly qualified and capable entrepreneurs who were involved in entrepreneurial start-ups, MBOs and acquisitions over many years. They differed from the remainder of the group for the entrepreneurial backgrounds.

The deal generation activities of the six angels noted here ranged from significantly pro-active for two individuals to a complete reliance on entrepreneurial solicitations for another two

³² Angels were not interviewed about their cognitive capabilities as it was not expected they would have much insight into representativeness or overconfidence.

angels. Mr. W and Mr. S acted like minor venture capitalists and engaged in a very proactive search for opportunities. Mr. P and Mr. V relied almost exclusively on entrepreneurial solicitations. Mr. P rather lamented the fact indicating that it was difficult to say no, whereas Mr. V seemed to embrace the concept raising additional funds from acquaintances when he became interested in a proposal. The remaining two angels, Mr. F and Dr. J, told stories of heavy reliance on professional and personal referrers who they would invest with again if they had the opportunity.

In addition to their histories, a review of the individual factor component scores was examined. Case study participants who represented traditional professions with high visibility (i.e. doctors and lawyers such as Dr. J and Mr. V) had high *Sought After* scores. The individual who felt remorse at having to continuously turn down eager entrepreneurs had a very large negative tendency to *Sought After* which may suggest that he made considerable efforts to hide his visibility. The two entrepreneurs who acted much like venture capitalists and whose stories indicated actively seeking investments (Mr. W and Mr. S) also had high *Go-Between* scores. They used a deal search method of pro-actively seeking investments (by history) and use of referrals and informants (by component scores) much like the formal venture capitalists they most resemble. This combination suggests there may be other dimensions to deal generation not fully explored here. These are similar to the findings in Chapter 6, but these suggest that habituals are very heterogeneous as well.

8.4.3 Association Between Appraisal Qualities and Successful Exit

For their first investments, Mr. F and Dr. J experienced substantially successful private equity investments. Mr. F exited profitably in 4 years and Dr. J received a three times multiple in three years. Both of these two used intermediated deal generation techniques and had strong financial motivations. On the other hand, Mr. S waited 13 years for his investment to begin to produce returns that then provided good yields for seven years before he sold it. Mr. W had

numerous successful investments over his extensive investments career. They were both proactive investors.

The two angels whose investments were characterised by entrepreneurial solicitations (Mr. P and Mr. V) did not fare as successfully. Mr. V's first investment ceased operations three years later, and Mr. P's investments were also unsuccessful³³. Mr. P made four investments with negative results arising from each of them.

These results seem to point to financial motivations and intermediated deal generation as indicators of successful exit. These results are similar to the logistic regression results from Section 7.2 in Chapter 7. An analysis of appraisal qualities that were associated with performance (as measured by exit) also demonstrated positive relationships between financial motivations and intermediated deal generation and successfully exited investments.

8.4.4 Association Between Successful Exit and Re-investment

While three of the angels identified here experienced successful first investments, two did not.

Yet all of them re-invested. In sum, of the 19 investments for which full information is provided, 10 were successfully exited. The re-investment profile for these histories has no relation to the success of the previous investment, a finding which supports the quantitative analysis from Chapter 7. It also indicated that performance on a previous investment had no association with re-investment on the subsequent investment.

³³ Mr. P did not specifically address his investments in the correspondence. His returns were calculated from his survey results.

Table 8-2 - Case Study Appraisal Qualities & Performance Results

	Heuristics		Number of Proposals Reviewed				Deal Generation Component Scores (1 st Investment)			Motivation Component Scores (1 st Investment)			Exit Performance
	Repr/ Stat	OC/ UC	1 st	2 nd	3 rd	4 th	AS	SA	GB	Fin	CC	Sport	
Dr. J	Stat	UC	4	5	5	5	-.31914	1.12516	-.82236	1.73703	.33187	-.07230	2/3
Mr. F	Stat	UC	1	1	1	1	.13335	-.03009	-.17882	1.82879	-.90035	-.34212	4/4
Mr. P	Stat	UC	1	10	40	40	-.76209	-1.52676	.10630	-.59607	-.52170	-.05807	
Mr. S	Stat	UC	4	4	4	4	-.49887	-.36346	1.08884	.64219	.10066	-.132312	3 /4
Mr. V	Repr	UC	1	3	10		-.27021	1.77185	-.85269	.94376	-.52876	-.05949	1/3
Mr. W	Repr	UC	9	7	7	7	1.01915	-.32539	4.09711	.58077	-.23944	.29309	Unknown

Repr – Representativeness; OC – Overconfident; UC – Under-confident; Stat – Statistical Reasoning; AS – Active Seeker; SA – Sought After;
GB – Go-Between; Fin – Financial; CC – Community Consciousness; Sport – Sporting

8.4.5 Do Habitual Angels Learn

Some angels appear to have improved their potential for exit in constructive ways even though none of them responded to the interview inquiry regarding learning in a meaningful or insightful way. These individuals seem to have a lack of introspection into this area despite what would appear to be very obvious improvements (or lack of improvements) in the manner of appraising investments. Two noteworthy observations are the exit strategies developed by the most prolific angel, Mr. W, and the appreciation for information asymmetries that now trouble Mr. P. On the other hand, a number of significant losses indicate an apparent lack of learning by Mr. V.

Mr. W developed an exit strategy that he perfected over his investment career. Expansion is a risky stage as growing firms fill their orders books as a result of their marketing efforts and the need for productive capacity increases. Yet receipts lag behind. This is a period frequently characterised by re-investment. However, angels are often disadvantaged in later rounds of finance because re-financings dilute their position (Murray, 1994). Mr. W recognises this risk and developed a formula to reduce the potential downside of waiting until companies are fully formed before exiting. He capitalises on the probability that firms may stumble in the distant future, but that they have bright immediate futures. He attempts to exit as the company is experiencing rapid growth, when competitors and entrepreneurs are willing and eager to buy into the firm, or dissolve relationships with investors. This takes place before a maturing company's prospects materialise. His strategy is logical if the investor expects to have little priority in future financings, if conditions of poor liquidity exist, or if it may be expected that entrepreneurs do not have the stamina to sustain their effort (as outlined by Mr. P). Thus, Mr. W learned to not wait too long, optimising his portfolio returns by having a greater frequency of less profitable exits rather than the slim probability of a future IPO. The expectation of numerous, but less profitable exits is a trade off to the elusive IPO.

Mr. P learned from four failures that the difficulties associated with moral hazard and agency are hard to resolve, even when complex legal agreements are involved. If fair treatment by the entrepreneur is not forthcoming, the ability for the angel to achieve any benefit is very difficult.

On the other hand, Mr. V had a number of commonalities that demonstrated a lack of learning. In each of the investment histories reported by him, he indicted that the entrepreneur approached him and that the entrepreneur was known to him. As the histories were recounted (three failures and one success), however, he came to describe the entrepreneurs as seriously flawed ('incompetent'). His only acknowledgement that he consistently made bad choice was in his re-investment intentions where he indicated he was "still a sucker" for re-investment.

Learning was not handled exhaustively by this thesis, but the findings in Chapter 6 indicated that some investment characteristics (such as the proportion of participation in follow-on investments) and proposal review indicated learning. There is some limited evidence of learning in the case studies, but there is also evidence that some angels persist in applying inappropriate appraisal strategies.

8.5 Conclusions

The case studies indicate that there remains a considerable degree of heterogeneity even amid the small number of habitual angels studied here. Habitual angels demonstrate substantive differences in motivations, deal generation and success (as measures by re-investment). The case histories and the accompanying PCA component scores for the appraisal qualities further indicate that this group of very involved angels are not homogeneous. There is still room for

new ways of classifying and highlighting cohorts that are homogeneous within groups, but heterogeneous between groups.

The case studies point to a strong link between deal generation and successful exit. The two angels who used intermediaries or informants (and who also had the highest financial motivations) successfully exited 6 out of seven investments for which the full history is known (Mr. F and Dr. J). This is the highest rate of success. Two angels who were actively seeking deals, and who used referrals and informants, had a success rate of three out of four of their known investment histories (Mr. W and Mr. S). The two angels who were sought after and who invested in deals solicited by entrepreneurs, had a combined total of one success in eight investments for which the entire histories were known (Mr. V and Mr. P).

These observations are similar to the findings in Chapters 6 and 7. Intermediated deal generation and financial motivations were identified as having better associations with success. On the other hand, the dismal results of some investments and then subsequent re-investment, indicate that success is not necessary for re-investment, a finding that was also identified in Chapter 7.

There is only limited evidence that habitual angels learn to improve their investment techniques from their own experiences. (There is no evidence to indicate whether they learn from experiences shared with other, perhaps more informed, investors.) They do not all exercise deal generation techniques that are similar to of high performing, formal venture capitalists and it is clear that habitual angels do not necessarily demonstrate financial motivations, nor do their financial motivations appear to increase. Rather, habitual angels seem to come to the private equity arena with a disposition and that disposition persists throughout their investment careers. Habitual angels who started by investing well seemed to continue to invest well, whereas a couple of angels who experienced difficulties never were

able to ‘reverse their fortunes’ by changing some of the habits that may have contributed to those difficulties.

These observations lend credit to the perspective that habitual business angels have qualities and abilities from the outset that seem to distinguish their activities. With the exception of Mr. W, it is not obvious that much learning about private equity investment takes place. Or rather, it is not obvious that *enough* learning takes place over a small number of investment experiences to promote more successful investments.

9 Discussion and Implications

9.1 *Introduction*

At the industry level, habitual behaviours are interesting because they support entrepreneurial economies at growth stages where there are few alternate financing options.

At the firm level, the nature of habitual and novice angels is of interest because the multiple investments made by habitual angels makes them more visible and increases the numbers of dollars that they invest over an extended period of time (Kelly & Hay, 1996a).

Understanding the performance implications are equally as important since they determine the level of success necessary to sustain the industry.

This study has provided exploratory empirical analysis of angels' appraisal qualities' (motivations, cognition, deal generation behaviours) relationship to re-investment (novice or habitual status), the results of which are outlined in Chapter 6. The thesis also explored the relationship between angels' appraisal and their ability to successfully exit their investments and the influences surrounding re-investment on the basis of their initial investment success. The analysis and findings for these is found in Chapter 7. In conducting these analyses, observations reflected on the ability of habitual angels to learn from their re-investment activities.

To accompany these primary objectives, a classification system was proposed based on angels' frequency of investment and their exit status upon re-investment in order to tease out issues related to intention to re-invest and to provide a guideline for the presentation of the results of this thesis (Chapter 3). The analysis focussed particularly upon novice angels –

further represented by one-time angels and first-time angels – and habitual angels. Habitual angels are further reclassified into serial and portfolio angels, however, observations regarding them are few because the focus of the thesis is on the re-investment decision which revolves about the first and second investments. A series of case studies investigated the four objectives of the study in open ended personal interviews with (five of the six) habitual angels. The study has also added to the field by adopting a methodology that produces a more representative sample, thus producing results representing a greater range of business angels than can be found by sampling from a BIS, BAN or convenience sample (Chapter 5).

The findings extend theory by applying the theoretically grounded, information-based model of venture capitalists' use of astute due diligence to guide success and further fund raising. This model was modified and applied to angels using a comparative approach (i.e. non-re-investing, intending to re-invest, and re-invested angels). Industry- and firm-level venture capital processes were reviewed extensively – a perspective first provided by Wright and Robbie (1998). This has added to van Osnabrugge's comparison of venture capital and angels from an agency theoretic perspective which directed only scant attention to deal generation. This also adds to Fiet's numerous works regarding informants and the differences between angels and venture capitalist networks. This also provides confirmation and some contradictions to the numerous works by Mason and Harrison.

This chapter first discusses the essential findings as they relate to the four major research objectives. This is followed by the thesis' contribution to theory by examining conceptual developments arising from this research at the industry level and at the individual (firm) level. Some comments regarding the method are noted. Implications in practice for angels, entrepreneurs and policy makers are outlined in the next section followed by the limitations and future research opportunities for scholars. The conclusion closes the thesis.

9.2 Findings Related to Major Research Objectives

Understanding the antecedents of re-investment is a fundamental question that arises from the importance of habitual angels to the informal venture capital investment industry. Understanding their nature is valued because of the role they will ultimately play as more frequent investors in the informal industry. Investigating the appraisal qualities of habituals compared to novices, at the level of the first investment, focuses on their differing capabilities prior to becoming habitual angels.

The major findings that relate to the research questions are addressed in this section.

Each is discussed in the order that they are presented below. Both the findings and related issues are discussed at this time. To recap, the major research questions are:

1. Are there significant differences between re-investing (habitual) and non-re-investing business angels (novices and one-time novices) as regards the manner in which they appraise investments at the level of the first investment?
2. Are some appraisal qualities associated with successful performance (as measured by exit)?
3. Is successful performance associated with re-investment behaviour?
4. Are there appraisal qualities that demonstrate learning?

9.2.1 Differences in Appraisal Qualities Between Novice and Habitual Angels (*Ex Ante*)

Angels who will go on to become habituals were not observed to differ significantly regarding their financial motivations on the first investment from novice angels. The results of the PCA identified clearly a financial component used to assess Hypothesis 1, but significant differences were not observed between the two groups. Habitual and novice business angels begin their investment careers with similar financial motivations. Variations do occur, however, in some of the non-financial motivations. For example, novice angels'

willingness to embrace community consciousness motives was significantly higher than that of habitual angels. This is a subtle, but important distinction since the limited literature about habitual angels generally describes them as being more like formal venture capitalists (Van Osnabrugge, 1998a; Sohl, 2003). These findings suggest that business angels' financial motivations are similar, it is rather their non-financial motives that distinguishes them.

The broad array of motives experienced by angels in general may be explained by the concept of trust. It is recognised that trust is a necessary ingredient for informal investing (Harrison et al., 1997) (more than it is necessary for formal venture capitalists (Shepherd & Zacharakis, 2001)). In addition, angels need to find competent entrepreneurs with deals that have upside potential and low down-side risks (Harrison et al., 1997). In order to satisfy such a variety of objective functions (trust, entrepreneurs, up-side, low downside, etc.), angels may need to exhibit a variety of motives (i.e. those other than strictly financial ones) in order to identify projects that meet all these needs.

Previous works comparing serial (three or more investments) with non-serial angels (one or two investments) (Van Osnabrugge, 1998a), and angels with venture capital firms (Fiet, 1995a; Van Osnabrugge, 1998b) did not examine deal generation at any length. When deal generation was discussed, the more limited perspective of investigating informants rather than the broader perspective of investigating deal generation was common. This was because a large proportions of angels were identified using BISs and the deal generation practices were assumed to have been related to BISs (Van Osnabrugge, 1998a). It is likely that this approach biased results. The differences between novice and habitual angels' deal generation highlight a three component frame work rather than an pro-active/passive framework.

The multi-variate (PCA) approach found weak support that first-time novices have more positive association (.702) towards pro-active deal generation activities than do one-time

novices (-. 480). Recall that first-time novices differ from one-time novices in their intent to re-invest, and that first-time novices are potential future habituals. Therefore, hypothesis 4 is partially supported by the finding (partially supported because the habitual behaviour was not found to be significant). First time angels' more pro-active deal generation may be related to their interest in the asset class and their intent to re-invest. They may view the investment process as a professional activity requiring a systematic approach. The rigor that angels apply to their deal generation may be an indicator of future re-investment potential

Hypothesis 5 suggested habituals would make more use of informants than novices, but the reverse is the case. The widely reported use of informants in previous angel studies and by the formal venture capital industry indicated that habitual angels may behave similarly. The final controlled variate for the logistic regression was significant, however, habitual behaviour was negatively associated with use of informants (variable *Go-between*). All of the variates in the controlled multiple logistic regression that included the informant-driven deal generation technique indicated a negative association between habitual angels and informants.

Thus, angels who go on to become habitual angels are characterised as significantly likely *not* to make use of informants (the advise of intermediaries, acquaintances of entrepreneurs, etc). The broader range of opportunities that an informant could provide to an angel would be thought to be asymmetry reducing, however, angels who will go on to become habituals make their first investments without the use of this information.

It is clear that the results of deal generation from a more representative sample may differ considerably than the reports of angels from a variety of previous studies. The habitual angels in this study were negatively associated with the informant/intermediary variable that

appears to be loosely associated with the passive informant literature (Gaston, 1989; Covenery et al., 1996; Riding et al., 1993) discussed in Chapter 2. There are two variables influencing this difference. The first is the nature of the data collection, the other is the issue of representativeness (implying a lack of bias).

First, other studies of would have assessed habitual angels' deal generation techniques at the time of the study, thus making comparisons between novices and habitual angels' current behaviour. This study attempts to tease out the differences between the deal generation behaviour of novices and would-be habituals at the time of their first investment. The anomaly of why habitual angels in a representative study would have a negative association with intermediated deal generation techniques needs more investigation using a multi-variate approach.

The other differentiating influence is the more representative sample. Angels who are sampled via BISs are more likely to report passive informant-type deal generation whereas there is a negative association between habitual angels' first investment (compared to novices). The negative association by habituals at the level of the first investment in a representative sample suggests that angels who will go on to become habituals come to their first investment in a manner that differs from the approach reported by angels later in their careers.

Regardless, the negative association of the informant/intermediary variable to habitual behaviour implies that angels are not receptive to recognising deals that may not have been actively sought. The difference between actively searching for and recognizing important new, or previously overlooked, information is the basis for a revised approach to entrepreneurial search processes (Kirzner, 1997) where entrepreneurs are more apt to recognize opportunities as opposed to searching for them (Koller, 1988). The relationship

between these variables, and the range of items that make up the scale seem ripe for further research.

Hypothesis 6 provides significant support that habitual angels conduct more deal generation activities combined than novices. This includes the pro-active approaches, the solicitations by entrepreneurs and informant-based actions. Not only do habitual angels conduct more investments than one-time novices, but first-time angels did as well. The nature of habitual angels is to outperform novices as regards deal generation at the level of their first investment. So while there is limited support for habituals more pro-active deal generation, and less deal generation with regards to informants, in total their deal generation activities surpass those of novices.

This is the first study to examine the cognitive profiles of business angels. Although cognition could not be assessed at different points in time (as was possible with deal generation and motivations), the emergence of the two variables as significant on numerous occasions suggests they have a useful role to play in providing insights about angel populations. To the extent that cognitive heuristics can change, these changes would have been embodied in the measurements taken at the time of the survey.

There was weak support for the heuristics, representativeness and overconfidence, in the controlled logistic regressions (hypotheses 7 and 8). The representativeness heuristic was weakly significant when used as the sole explanatory variable, and under-confidence was weakly significant in all of the variates in which it was included.

The negative coefficients for the heuristic representativeness imply that habitual angels are less inclined to make use of small samples, anecdotes and personal impressions, preferring industry statistics, reports and informed insights. These results are in the expected direction

and are in harmony with findings that suggest that habitual angels prefer industry sectors in which they have more experience and that they prefer to co-invest (Van Osnbarugge, 1998a). Industries in which they have experience represent a previously acquired knowledge base that supplies greater information. Similarly, co-investing brings other individuals to the investment further broadening the information and knowledge base of the group. The presence of more information suggests a more statistical rationale than representativeness.

The measure for overconfidence is manifest as an individuals' estimate of their odds of assessing correctly to be greater than they really are. A confusing element was the descriptive analysis that indicated most angels were under-confident, yet when controlled for entrepreneurship, time and net worth, habitual business angels demonstrated positive associations with overconfidence. This is explained by the presence of the independent variable *Years since first investment*. Age has a negative influence on overconfidence (Forbes, 2005) and whereas the advancing years since an investment also represent the increasing age of the business angel, this variable plays an important role in the regression variates. If one were to isolate a group of habitual business angels of the same age (or duration since their first investment) they would demonstrate similar levels of overconfidence³⁴.

Thus, there are some cognitive similarities between formal venture capitalists (Zacharakis & Shepherd, 2001), entrepreneurs (Forbes, 2005; Busenitz & Barney, 1997) and business angels. They all make use of overconfidence signifying a similarity in their decision-making practices. Formal venture capitalists' overconfidence impacts the manner in which they gather and interpret information, and may well be necessary for venture capitalists to raise future funds, signal their worth to able entrepreneurs, and assess the myriad proposals they

³⁴ The correlation coefficient for *Years since first investment* and *Overconfidence* is -.244 and is significant below the .05 level.

receive annually. Overconfidence may impact on informal venture capitalists similarly. Bolstering entrepreneurs, reviewing market and business plan information, assisting management, and conducting board responsibilities may be practices that are better exercised when one has a confident approach. Furthermore, it may be possible that overconfidence is a defacto prerequisite for individuals who invest in uncertain, high risk situations. In such situations, an absence of overconfidence may be construed as a lack of support for the investee or entrepreneur.

It has been suggested that -- with investment frequency -- angels lose their 'play money mentality'³⁵ (Kelly & Hay, 1996b) and begin to behave and make decisions more like formal venture capitalists (Van Osnabrugge, 1998a). The findings relating to learning are yet to be discussed, however, the findings in this section indicate that some of the differences between habitual and novice business angels are not a consequence of investment frequency, but are actually present from the outset. The possibility that habitual angels may be identified at the level of their first investment (*ex ante*) presents interesting questions. If habituals can be identified at the level of their first investment, are they better targets for entrepreneurs? If habitual angels can be identified early, can professional development help improve the success rate of their subsequent investments? If habitual angels conduct some activities differently, does providing instruction have the ability to turn novices into habituals?

9.2.2 Association Between Appraisal Qualities and Successful Performance

Hypotheses 9 to 13 reviewed the same three appraisal qualities to assess whether there are any associations with successful performance as defined by exit and appraisal. The results from this section were intuitive and in the intended directions indicating the validity of the

³⁵ A 'play money' mentality refers to the mindset whereby angels are 'playing' with investments in sectors they are not familiar with rather than as an investment.

measurement scales and components derived. The analysis was conducted using means of components and MannWhitney U tests, and a controlled logistic regression where economic/uneconomic exits were the dependent variable.

In the PCA analysis, the economic exits had large positive financial motivation component score means that were significantly different from the small negative uneconomic exits. That financial motives are significantly positively associated with economic exits was also supported by the controlled logistic regression. Hypothesis 9, which suggested that angels exhibiting financial motives, would be more likely to experience success (as measured by exit), is supported.

Habitual business angels have been reporting for years that informants are their preferred methods of deal generation. In the PCA, business angels who exit successfully are associated with highly positive values for the intermediated variable, *Go-between*, which differs significantly from the small negative values of those exiting uneconomically. The *Go-between* deal generation variable is also significant as a single explanatory variable in the controlled logistic regression analysis. Both of these findings support hypothesis 11 which suggested that angels who are receptive to unsolicited proposals are more successful than angels who shun such activities.

It should be noted that ‘cold calling’ actions by entrepreneurs do not exhibit a similar pattern. Thus, the intermediated effect of having an informant/intermediary intervene infers credibility upon the entrepreneur. High-ability entrepreneurs should have no difficulty finding reputable informants to speak on their behalf. It may be possible that entrepreneurs who have difficulty cultivating informants on their behalf have questionable issues that are obvious to others, but perhaps not obvious to themselves.

The overconfidence variable again turns out to be a defining variable, only instead it is manifest as under-confidence. In the PCA, angels who exited uneconomically had a positive component mean for overconfidence which differed significantly from the angels exiting economically who demonstrated a negative mean. In the regression analysis, increases in overconfidence are significantly associated with uneconomic exits (hypothesis 12). The intuitive value of this finding is that angels over overestimate their ability to correctly assess a situation are not rewarded with successful exits. Under-confidence, in this situation may imply a devotion to such behaviour as conducting more effective due diligence, assessing market potential and industry structure, and checking entrepreneurs' references.

In sum, this section indicates that financial motivations, use of informants and intermediaries, and a lack of overconfidence are qualities that reward business angels with performance. In this analysis, performance was measured as the ability to exit in a manner that has the potential to be economic. Economic exits include exiting to the entrepreneur, sale to another individual, sale to a VC, sale to a company (trade sale), or IPO. Those who may wish to discredit the earlier anomalous findings about habitual business angels must be prepared to reject the findings of this section as well, which are intuitive and insightful.

9.2.3 Association Between Successful Performance and Re-investment (Habitual Behaviour)

The final hypothesis addressed angels' requirement for successful performance in order to re-invest. The null hypothesis was proposed, indicating that there was no association between angel performance (addressed in the previous section) and re-investment, because angels have no need to demonstrate credibility to the industry and no need for reputation effects since they have no need to raise new funds. This analysis was conducted with a logistic regression analysis where habitual/novice behaviour was the independent variable. The

regression analysis found support for the null hypothesis. Successfully exited investments, at the level of the first investment, are not associated with habitual behaviour.

The information-based model for business angels indicates that widespread information about their successes or failures is not a necessary component for re-investment, and the transfer of information amongst and between (even poorly developed) informal informant networks does is not associated with habitual behaviour (re-investment). The theoretical links between successful exits and re-investment are well developed in the formal venture capital literature. Here, however, the lack of an angel agency relationship with a limited partner confirms that – unlike formal venture capitalists – business angels’ re-investment activities are not associated with previous successes.

9.2.4 Do Habitual Angels Learn

The last research objective assessed the view that habitual angels learn. This necessitated investigating changes in habitual angels’ activities over a series of subsequent investments.

Hypotheses 2 directed specific attention to habitual angels’ motivational changes although the summary statistics provide some contributions to this objective as well. Findings of this nature entailed a review of habituals’ investments across the (possible) four investments reported. This perspective complements the perspective that habitual angels are different from novices from the outset (findings discussed in Section 9.2.1).

Motivations are known to change over time (Donckles et al., 1987), but it was suggested here that habitual angels’ financial motives would increase with subsequent investments which was intended as an indication of a growing awareness of financial concerns and their importance to the informal investment process. Three items in the scale of motivations were directed at “financial” concerns. One of these, *Capital appreciation*, showed weak support

for the hypothesis because the mean increased in importance (from an important to a very important consideration) over the course of the four investments. This implies that there is some learning as regards the financial reasons for selecting informal investment as an asset class.

In a recent study of Scottish entrepreneurs surveyed in 1994, habitual portfolio entrepreneurs were more likely to report the generation of personal wealth as their motivation for business ownership than were novice entrepreneurs (Westhead et al., 2005). As their entrepreneurial frequency increased, their financial motivations had increased as well. The expectation that angels would be similarly motivated was based on both their entrepreneurial backgrounds and the similar situations in which they invest. The findings are weak as regards financial motivations (generation of personal wealth) and the informal venture capital industry.

It is unclear that the increased specific information angels acquire over several investments and their declining naivety (Van Osnabrugge, 1998a) help them move in the direction of acquiring improved financial motivations. As Fiet (2002) observes (regarding entrepreneurs), “A much more interesting issue to sort out is whether scholars can develop theory to inform aspiring entrepreneurs how to act rationally, and if so, whether they can use it for training” (p. 48). In the context of angels, where financial motivations are seen to improve exits (and successful exits are associated with successful firms) developing training interventions may encourage a more flourishing angel investor environment.

The deal generation analysis investigated the amount of proposal review conducted on each of habituals' first to fourth investments. Habituals' proposal review varies from 2.8 to 18.3 proposals reviewed from the first to the fourth investment which are differences that are weakly significant. The inclination to review more proposals with investment frequency indicates that habitual angels come to understand the importance of selecting from a greater

variety of investment opportunities in order to identify those for which they are least informationally disadvantaged. The informational benefits may include selecting from a variety of industry sectors and their associated market risks (Van Osnabrugge, 1998a), as well as alleviating agency concerns associated with selecting low-ability entrepreneurs.

A number of noteworthy observations related to learning were identified in the investment statistics noted in Chapter 5. These related to the amount and nature of the various investments (such variations in total investment amounts) and the proportion of participation in follow-on investments. These are discussed here.

Habitual angels' demonstrate large variations (up and down) in the medians of their total investments, however, the mode for their total investments tends upwards (significantly)³⁶. This general upward trend is contributed to by a small group of very active angels whose investment totals are significantly larger than the remaining habituals. It also contributed to by a tendency for initial investment amounts to increase with investment frequency (weakly significant). The significant presence of the multi-investing (four-time) habitual angels indicates that there may be value in segregating cohorts of habituals on the basis of four or more lifetime investments. They may also be useful to use these as an independent variable in future regressions.

Another notable change in habitual behaviour was the increase in the proportion of participation for follow-on investments from the first investment to the fourth. An increase in the proportion of business angels participating in follow-on investment is associated with a positive change in learning. Twenty-three 23.1 percent of habitual angels conducted follow-on investments for their first investment. This increased to 26.9 percent, 46.2 percent and 42.9 percent participation for second to fourth investments respectively. (A binomial test

³⁶ The total investment is the sum of the initial investment and any follow-on investments.

using the first investments' proportions as the expected proportions (.231) showed that the first and third investments were weakly significantly different [Observed proportion = 46.2; Expected proportion = 23.1; $p = .057$].) The tendency for increased participation in follow-on participation could suggest that habitual angels learn the value of continuing to support investees, and perhaps the importance of staging. Staging and follow-on investments represent a vital element of the venture capital process by signalling the entrepreneur that the relationship may be terminated (Sahlman, 1990). Participating in follow-on financing is also a risk reduction technique that advances funds throughout the relationship instead of the initial investment. If habitual angels acquire a growing understanding of the complexity of the private equity process and learn to reduce informational asymmetries and close information gaps as they gain education by experience, there are valuable implications for their capacity to improve their performance given the appropriate skills (San Jose et al., 2005). In future studies, follow-on finance may serve as a useful independent variable for performance.

In summary, there is good reason to believe that habitual angels are fundamentally different than one-time and first-time novices for all the reasons outlined in Section 9.2.1, Differences in Appraisal Qualities Between Novice and Habitual Angels (*Ex Ante*). However, these *ex ante* differences are also accompanied by learning which is outlined in this sub-section. Habitual angels demonstrate learning in some of their financial motivations, their inclination to review more proposals with investment frequency, increasing total investment amounts, and increasing participation rates of follow-on finance.

9.3 Conceptual Development

In the previous section, the major findings were highlighted as they pertained to the research objectives. This section reviews the theoretical foundation of venture capital and how our perspective of informal venture capital may change given the contributions noted. This

section begins by reviewing theory related at the industry level and then at the personal (firm) level which is similar to the presentation of the venture capital industry in Chapter 2.

Industry Level

At the industry level, the rudiments of a theoretically based inquiry begin by questioning why informal venture capital exists at all. Information-based arguments recognise that young, growing dynamic entrepreneurial firms are subject to high levels of information asymmetry (Wright & Robbie, 1996). The lack of traditional sources of funds for firms subjected to high levels of information asymmetry has resulted in an industry sector of private equity that caters to these firms. The formal sector are private equity suppliers who specialise in managing informational asymmetries (Wright & Robbie, 1998).

The informal venture capital sector has, likewise, developed to fill the needs of high growth entrepreneurial ventures unable to acquire finance from traditional sources, and unable to be seriously considered by formal venture capitalists (for a variety of reasons) (Fiet, 1996). The informal sector of the industry, however, cannot be said to be specialists in the management of information asymmetry because many of the industry sector participants are non-professionals (as described by Lerner, 1998). This has resulted in actions that are contrary to effective appraisal on behalf of some (not all) participants in the sector (business angels). Some of the findings indicate that some angels invest with little motives other than financial, little deal flow, and who have inclinations towards the use of representativeness and overconfidence. This group of business angels are uninformed about basic effective appraisal techniques.

At the formal level, the industry structure is oligopolistic (Anand & Galetovic, 2000) and concentrated, thus restricting new entrants (Hyytinen & Toivanen, 2003). Formal venture capital firms act relatively homogeneously exercising similar fund raising patterns, limited

partnership agreements, deal generation activities, proposal review and fiduciary obligations. These findings demonstrate that various cohorts of participants in the informal sector of the industry act with varying motives, are disinclined towards informant-driven deal generation, and sometimes invest in the first deal they see. Thus, the informal sector of the industry does not act homogeneously, and because they have no responsibility to funders the industry is highly accessible to new entrants and is heterogeneous.

From an industry perspective, the finding that actual appraisal behaviours indicative of habituals does not seem to be aligned with the appraisal qualities necessary for successful exits likely results in increased supply. Varying qualities of angel appraisal result in increased numbers of entrepreneurial investments (than would be indicated in such a situation in the formal sector of the industry) because there are motives other than financial maximisation driving their activities. This is in keeping with the large estimates of angel activity observed (Mason & Harrison, 2001b; Sohl, 2003). If only highly knowledgeable, financial maximising, asymmetry-reducing angels made investments, fewer investments would be made. The financing difficulties described by entrepreneurs would be worse than it is now. Currently, entrepreneurs who do not meet financial goal-maximising angels' motives, may satisfy those of non-financial goal-maximising angels. Consequently, lower quality entrepreneurs are funded.

On the other hand, angels' inability to assess the quality of entrepreneurial projects has negative implications for the size of the marketplace (Akerlof, 1970). It is costly to acquire the ability to effectively manage information asymmetries, particularly for small investments (Harrison & Mason, 1991), since professional angels would have to develop and cultivate a background of financial, managerial and industry knowledge and expertise. In other words, they would have to become highly informed. Obviously, these costs will have negative implications for expected rates of return and the numbers of projects funded.

Optimum marketplace conditions exist where uninformed angels try to assess the quality of entrepreneurs by observing informed angels. When uninformed angels can observe informed angels, they infer the quality of the entrepreneurs from observing the actions of the informed angels. When there are numerous obvious transactions, uninformed angels believe entrepreneurial prospects are good and are reassured to invest. If there are sufficient informed angels in the market, angels will be generally satisfied with the quality of their investments, and entrepreneurs will be satisfied with the prices they receive for their shares.

However, if informed angels are not investing, or their investments are not obvious or visible (such as in the inefficient capital markets noted by Sohl (2003), uninformed angels may make judgements about entrepreneurial quality without any direct information about the market. These conditions produce a surfeit of poor quality entrepreneurs (Amit et al., 1990a) who know that there are uninformed angels who cannot determine entrepreneurial quality causing a “lemons market” to emerge (Akerlof, 1970). In such a situation, the increase in poor quality entrepreneurs causes high quality entrepreneurs to refrain from offering their shares in the market. They will hold out for better offers than those offered by uninformed angels thus heightening the problem of reluctant demand (entrepreneurs who are reluctant to offer their shares to business angels) (Gompers et al., 1998; Harrison & Mason, 1991). The foregoing argues that it is sensible for uninformed and informed business angels to become engaged to promote visibility and observation of deals that take place in the market. This aids in informing the uninformed. More contact permits the uninformed to learn about the presence and management of information asymmetries.

Firm (Individual) Level

In Chapter 7, the findings indicated that negative tendencies towards overconfidence and positive tendencies to financial motives were associated with exiting successfully from

informal investments. The strength of these findings is that they are intuitive and describe the qualities that would seem to be necessary for individuals to successfully invest. They characterise successfully exiting angels as those who are financially motivated, and are not overconfident (over-estimating the value of the information they have). Business angels who stick to financial maxims outperform those who invest with other motives and with other analytical temperaments. Fun, excitement, challenge and altruistic motives reported by angels represent investment motives that are not rewarded by high rates of successful exit. Indeed, it may be questioned whether successfully exiting an investment (an inherently “economic” type of measure) is an appropriate measure for angels with non-economic motives.

However, in almost every instance, appraisal qualities that are associated with investment success are shunned by habitual angels. The group of angels who will become the largest players in the informal venture capital market, and who would be expected to be more financially astute than novices, are not.

It is difficult to describe habitual business angels as excellent managers of information asymmetries, or to suggest that angels who continuously re-invest are more like formal venture capitalists because this research has produced some contrary findings regarding what determines investment success compared to the appraisal habits of those who will go on to make the most investments. First, habitual behaviour is associated with increases in overconfidence yet exiting economically is associated with decreases in overconfidence. Second, financial motives are positively related to exiting economically, but habitual behaviour is not significantly associated with financial motives. Thirdly, economic exits are significantly linked to the use of intermediaries, go-betweens, entrepreneurs’ acquaintances and investment clubs, yet the use of these methods of deal generation is shunned by habitual angels. These anomalies describe actions by habitual angels that contradict the appraisal qualities that are associated with successful exit.

Regarding the first, habitual angels (when controlled for entrepreneurship) are positively associated with overconfidence which is an appraisal quality that is negatively associated with economically exiting investments. Angels who are overconfident (on their first investment) goes on to make multiple investments regardless of their profitability suggests a profile of a cavalier, independent investor.

This temperament is in contrast to that of entrepreneurs who needs overconfidence to weather difficult operational and market circumstances (Busenitz & Barney, 1997). For the entrepreneur, overconfidence allows them to overcome obstacles that might be otherwise hard to accomplish (Busenitz & Barney, 1997). Activities such as cultivating suppliers, customers and employees require the reassurance of a confident entrepreneur. The informal venture capital investor's role is to select an investment by analysing markets, evaluating the entrepreneur's stamina, investigating industry trends -- in general, undertaking to verify the entrepreneurs' proposals and potential profitability (Van Osnabrugge & Robinson, 2000). These activities do not require overconfidence.

Second, although financial motivations are associated with successful investments, habitual angels demonstrate no significant association with financial motives. In Chapter 4, it was argued that angels' motivations are analogous to the objectives and policies of formal venture capital firms, however, contradictions continue to defy logic and theory as regards business angels' motivations. Angels' motivations are difficult to precisely differentiate and quantify, especially when compared to the relative ease with which formal venture capitalists' policies and objectives are articulated. For example, an in-depth convenience sample of business angels' indicated they want to make substantial non-financial contributions to investees such as: providing their network of contacts, using their personal skills, taking advantage of their business experience, making board contributions, and providing finance-raising capabilities

(Haines et al., 2003). Whereas it might be expected that a convenience sampled group of angels would have a greater financial orientation due to their already acquired angel status, this does not appear to be the case. Indeed, business angels' indications are that they are more prepared to provide value added than formal venture capitalists whose value added role is disputed (Rosenstein, Bruno, Bygrave, Taylor, 1993).

Lastly, habitual angels are negatively associated with the deal generation techniques of using intermediaries, acquaintances and investment clubs despite the tendency for these deal generation techniques to be associated with successful exits. Where it is known that more skilful investors have superior access to deals (Amit et al., 1998) habitual angels' behaviour appears ill informed at least. Habitual angels may be disinclined to seek the deal flow of informants because of issues of mistrust, or because they are attempting to reduce their visibility (Harr et al., 1988), even though they are hampering their prospects in the process.

9.4 Comment on Novel Methodology

The methodology in this study is rigorous in its attempt to produce a representative sample of angels that is based on an inclusive and broad definition. The various sub-sectors of angels highlighted and deselected by various methodologies suggests the field is advanced by adopting an inclusive population definition. The methodology has a number of elements that reduce some problems associated with other methodologies such as unknowable populations, age/success biases, geographic areas where there are no BISs or BANs, and costs.

Calls for longitudinal data regarding the business angel and their investments (Sohl, 2003) are difficult to administer because there are limited sources of secondary data. Though the presence of BANs, for more than a decade, should improve access to data, British experiences indicate that it continues to be difficult to track angel data (Harrison & Mason,

1996; Mason & Harrison, 1997b). Although this study is not a longitudinal data collection project, it has features which are similar: 1) collecting chronological information from first investment to fourth; 2) identifying patterns and changes which may have occurred over the duration of an angel's investment history; and 3) it permits follow-up with existing respondents by working directly with angels (some BANs and BISs require researchers to submit their questionnaires for distribution by the organisation). An additional feature is that this study can be replicated periodically with little likelihood of overlap since the population database of new firm incorporations is established chronologically. Selecting a new database from a different year produces a new population of firms permitting the monitoring of trends and changes in the informal investor population.

Most business angels who are associated with BANs receive most of their deal flow from BANs (Mason & Harrison, 2001a). It was argued in Chapter 5 that the use of BANs and BISs as the universe for sample selection may influence the types of search behaviours observed (Van Osnabrugge, 1998a). Since the purpose of these groups is to identify proposals and pass them along to other members and subscribers, the influence of informants may be overstated. A representative group of angels might be expected to differ. This was clearly the case when the controlled regression indicated habitual angels had negative tendencies to intermediated deal generation. This finding may be a consequence of no BAN or BIS usage in the region, or it may be a consequence of studying a representative sample. Most likely it is a combination of both.

Another area where convenience samples and representative samples may diverge is proposal review, a topic about which angels' activities are polarised. Almost half of habituals invested in the first proposal they saw on their first investment. Other angels were reviewing dozens. More attention focused on the proposal review practices of habitual angels particularly could

provide better insights about the differences between BIS and BAN angels and the representative group drawn from new firm incorporations.

This study demonstrates that angel research methods benefit from the use of multi-variate statistical techniques. Deal generation, for example, is more complex than may have been thought given the literature's previous predilection towards the study of informants, as is motivations. Some of the variables in the bi-variate analysis were more correlated with the control variables and produced opposing results when the more thorough multi-variate analyses were conducted. In addition, the entrepreneurial backgrounds of angels have been used frequently as the basis for deriving assumptions about business angels. However, in the logistic regression conducted in Chapter 6, the entrepreneurial variable was rarely significant. Given the advent of multi-variate statistics in business angel research, the entrepreneurial background may play less of a role than has been previously thought. These types of findings are not possible without multi-variate analysis. More rigorous sampling procedures are necessary to enable the use of these techniques.

9.5 Implications for Policy and Practice

This work presents interesting implications for angels, entrepreneurs and policy makers.

Angels' motivations are complex and highly individual, and the findings hint that there may be other motivations yet to be revealed by these individual, enigmatic investors. Not all angels are motivated by strictly financial concerns, so entrepreneurs should stress different strengths that the angel may bring to the project (rather than just money) in order to accommodate these unusual objective functions. These appeals would be best based on the motives of the angels they are approaching. In the event that angels do not reveal their full motivations, entrepreneurs would be advised to stress financial and non-financial areas where the angel may be useful to the firm. On the other hand, financial motives have been

associated with successful performance as measured by exit. Therefore, ambitious entrepreneurs may want to broaden their search to ensure that their angels are sufficiently endowed with financial motivations.

Policy-makers and entrepreneurs should be aware that overconfident, non-financially motivated angels and sub-standard methods of deal generation are not associated with successful exits. The persistent use of inappropriate entrepreneurial appraisal techniques has the capacity to ultimately lower the quality threshold for entrepreneurial projects. The presence of poorly informed angels in the industry provides a supply of capital for low-ability entrepreneurs who benefit because opportunities are funded that may not have otherwise stood up to more rigorous financial and statistically-based inspections. Furthermore, if high ability entrepreneurs cannot find properly qualified (Informed) angels, they will withdraw from the market. Thus, low ability entrepreneurs become the beneficiaries when the industry is characterised by poorly informed angels.

Since under-confident, financially motivated business angels are associated with successfully exiting investments, the circumstances that will benefit high-ability entrepreneurs suggests cooperating with highly informed angels. High-ability entrepreneurs want to look for angels who demonstrate financial motivations, and are prepared to exercise substantive levels of screening, due diligence, checking facts and entrepreneurs' references (as examples of under-confidence). (The presence of investors exerting discipline on entrepreneurs acts to reduce overconfidence (Forbes, 2005).) The discipline they bring to bear on the firm is constructive.

There is no evidence that cold calling by entrepreneurs is an effective technique to identify potential angels. Therefore, entrepreneurs are encouraged to develop contacts, acquaintances and potential "intermediaries" who can vouch for the entrepreneurs' integrity. The intermediated position is important to build third-person credibility for the entrepreneur. In

addition, policy makers that are mandated to encourage introductions between the two may want to encourage entrepreneurs to identify advocates who can approach angels.

On the other hand, there may be a greater need for the provision of advice for business angels. There are fundamental discrepancies between the appraisal qualities of habitual angels and the appraisal qualities that are associated with success. This is likely due to a lack of understanding of the determinants of successfully exiting investments. There may be room for more formal education or angel academies (San Jose et al., 2005) where angels are educated in matters of effective appraisal³⁷. (It needs to be restated that financial motives are only necessary to the extent that angels wish to successfully exit. Angels whose objective functions do not include financial maximisation may not be concerned with the potential success of their investment³⁸.) Furthermore, the case studies highlighted some angels who continued to apply inappropriate appraisal strategies even after as many as three failures and their financial motivations did not improve. Case observations were made of two investors who, combined, had one successful investment in eight. Their continued application of inappropriate appraisal strategies may have been conducted in relative isolation, and their appraisal strategies may benefit from instruction.

In addition, to the extent that angels support entrepreneurial endeavours, there is less dependence by entrepreneurs on government assistance programs and initiatives to provide

³⁷ It is important to reinforce the conceptual difference between BANs and BISs at this point. The essential purpose of business introduction services is to provide matchmaking opportunities for entrepreneurs. The essential purpose of business angel networks is to bring angels together in a collegial manner to share knowledge, experiences and professional development. The introduction of investment opportunities is secondary.

³⁸ Angels exercising objective functions other than financial maximisation may be less concerned with successful exits. On the other hand, if their motivations are otherwise, they may not have the entrepreneurs' best intentions in mind since successful investments are closely aligned with successful firms which are closely aligned with survival of the firm.

funding assistance. Increasing the supply of angel capital presumably relieves resources that would otherwise have been provided by government intervention.

The findings summarised in the previous two sections highlight anomalies regarding the quality of business angels' appraisal versus the qualities that constitute effective exit. These are important to angels, entrepreneurs and policy makers and they have important implications for BISs and BANs. The findings show that angels who go on to become habituals initially often adopt appraisal qualities that are in opposition to those that are deemed profit maximising. Though multiple motivations may increase the supply of angel capital, a proliferation of uninformed angels (poor appraisers) negatively hampers the development of good entrepreneurial projects. These two features work against one another.

Thus, the real value of BANs may be their role in educating one another to help uninformed angels make better investments. BANs most useful roles may be -- not to play matchmaker, but rather -- to act as a vehicle where uninformed angels are in close proximity with more informationally astute angels for the purposes of learning. By investing alongside more capable colleagues, new and developing angels can observe the qualities necessary to make investments in high-quality entrepreneurs (Harrison & Mason, 1996; Mason & Harrison, 1997b). Informed angels are more likely to exit, improving exit rates which indirectly has the effect of raising the quality of deals in the marketplace as high-ability entrepreneurs view the capable, informed angels.

The incentive for informed angels to share their abilities and investment knowledge alongside uninformed angels are threefold. Firstly, groups of angels can invest in larger, more mature firms because they have more funds as a group and more mature firms generally need larger sums of finance. Secondly, there is an increased probability the angels will succeed as a result of investing in less risky, more mature, later-stage companies. Thirdly, the quality of

entrepreneurial projects will improve when high-ability entrepreneurs observe a more informed industry composed of combinations of qualified angels and larger sums of finance.

BANs place their emphasis on the angel (BANs), whereas BISs are designed to find finance for the entrepreneur (BISs). This slight variation in focus is very important if angels require professional development and access to other informed business angels. In Atlantic Canada, the region studied in this research, the policy focus has been on match making rather than on attempts to educate angels. Three national and regional government-sponsored BISs, operated over the past decade or so, had relatively little success as regards match-making. A number of Internet-based BISs that were later available also met with trivial success as regards the numbers of entrepreneurs and angels who bought the service and frequented the portal (Farrell, 2004). It could only be assumed with few people frequenting the portals, that few matches were made.

In BANs, angels meet other angels, learn from them, share experiences, and generally network with other like-minded individuals. The (entrepreneurial) grooming mechanism performed by BISs may, in fact, contribute to deal generation concerns by “polishing” otherwise less capable entrepreneurs. It is more useful to educate angels (BANs) rather than polish and proffer entrepreneurs coddled by BIS personnel. Improving angels’ knowledge acquisition, as a tool for increasing competency (Sohl, 2003; Sorheim & Landstrom, 2001), is supported by the findings in this thesis.

Policy concerns about the merits of encouraging informal investment (Lerner, 1998) can be mitigated if useful instruction for business angels provides them with assistance in appraisal, selection, monitoring and governance issues. Improving decision-techniques to reduce heuristic thinking may reduce such predilections because scrutiny, for example, is known to

temper overconfidence (Bazerman, 1998). The appraisal processes associated with investigating patents, markets, competitors and business development are all types of scrutiny. In addition, Zacharakis and Meyer (1998) suggest the formalisation of intuition and decision-making using checklists and scorecards in situations where biases cloud learning and judgement. Checklists and scorecards identify salient information as a decision tool and involve a systematic evaluation of the variables involved.

9.6 Limitations and Future Research Opportunities

There are a number of limitations to this study that offer the potential for future research opportunities. This section reviews some of the limitations due to sample size, angels that may be missing from the sample, the potential for hindsight bias, and the ability to generalise from this research. A number of areas have emerged that are interesting areas for future research. The presence of family angels here contradicts some findings elsewhere, and there is evidence that the customary classification of using number of investments may be more effectively replaced with intentions to re-invest. Some new competing deal generation theories have emerged which may improve on the findings here, and the usefulness of cognitive variables is discussed.

The sample size is small, however, not so small that bi-variate and multi-variate analyses are not possible. This work is exploratory in nature and the intention of the analysis is to identify significant differences, correlations and other relevant analysis to provoke thoughtful consideration regarding angels habitual behaviour. The positive and negative betas associated with significant correlations should guide future thought in the area and may help in the evaluation of novice and habitual activity. Definitive cause and effect relationships cannot be conclusively deduced from such relationships, however, possible explanations are proposed that should enlighten the reader.

One specific group of angels not represented using this method are those who have not chosen to be a director or one of the firm's principals. It is thought that this group is small because 89.5 percent of angels in a Canadian study indicated their intention to serve on the board of directors, or be advisor to their investees (Riding et al., 1993). The proportion in this sample is suspect, however, because it is derived from the results of a convenience sample. The proportion of angels opting out of a role as a director may be larger than 10.5 percent in light of some of the case studies examined here. It is possible that the proportion of angels who opt not to be a director would be larger in a more representative study. Nonetheless, differentiating angels who prefer to be directors from those who prefer to be investor-observers provides interesting research possibilities. Those who choose to remain observers represent a distinct group, and the nature of their investment motivations -- and certainly their governance methods and forms of oversight -- would be expected to be different. Firm estimates of those who are not on the board of directors would considerably inform the discipline.

The data collection method presents some issues since the survey was conducted at one point in time whereas the investments were made at numerous points in time over a period of years. The impact of time may influence the angels' abilities to clearly recall the motivations of earlier investments, or their perceptions of those investment motivations may have changed (hindsight bias). In some cases, the recollection requires consideration of events which took place decades ago. These qualifications, however, apply to all surveys where relatively subjective information is recalled after the fact. It was not possible to measure variations in business angels' use of cognitive heuristics over a number of subsequent investors. Thus, the measures conducted here could benefit from longitudinal examination which would be a worthwhile effort for future research.

Atlantic Canada was chosen as the population base for this study because it is the author's home so proximity and regional interests were a priority. In addition, as a doctoral research study, limited resources were available. However, Canada is an extremely large country by land mass, and with great separation amongst various pockets of people. Consequently, the venture capital context and situations surrounding angels in British Columbia, for example, (approximately 6,500 km away) may be very different from those in Nova Scotia. Simple geographic breadth may cause other provinces or regions to be very dissimilar. In addition, although federal rules guide certain taxation implications, each province has its own securities regulations. Thus, the ability to generalise from this study may be influenced by the dissimilarities of the population from which it was drawn.

The ability to generalise the study not only relates to both the geographic location of the region, but how it is populated (discussed in Section 5.3.5) and the availability of formal venture capital. To date, most studies about business angels have been drawn from highly populated areas that have significant access to formal venture capital such as Fiet's works in Texas, Mason & Harrison in the UK, Sohl, Freear and Wetzel in the densely populated north eastern US, and Riding and his colleagues in Ottawa. The population from which this sample was drawn does not share these characteristics. Atlantic Canada is sparsely populated (2.4 million persons in a land mass greater than that of the UK). It is also under-represented (by population) because only small number of venture capital options have been available in the region over the past two decades. Of the \$1.8 billion invested by Canadian venture capital firms in 2004, \$37 million were invested in Atlantic Canada (CVCA, 2005). This represents 2.1 percent of the venture capital for seven percent of the population.

Thus, generalising from this study may be most apt for regions that are similarly endowed – those without significant access to formal venture capital options, with small cities joined

together by sparsely populated region, large land masses with few people overall, or which are geographically separated from others.

The presence of larger numbers of family angels in other broad studies (Bygrave et al., 2002; Gaston, 1989) and this one, and the work already begun by Erikson et al., (2003) identifies a broad new direction for future research. This study begun in Norway identified arms' length angels as making more investments than family angels (Erikson et al., 2003) which is contradicted by these findings. The representativeness testing in the methodology for this study indicated that angels who make both family and arms' length investments make significantly more investments than either family-only or arms' length-only angels. This may be explained, in part, if a punitive capital gains tax system for family investors in Norway discourages family investments. This may further be explained by differing definitions. In the Norwegian study, family angels were defined as those for whom a majority of investment frequency were in businesses run by family. In this study, "combination angels" were classified as such if *any* of their informal investments were made to family.

There are more differences between one-time angels and habituals than there are between first-time angels and habituals which should cause us to rethink customary classifications based on numbers of investments. More appropriate categorisations may include the intention to re-invest, for example. Case studies suggested that a lead or backer categorisation is also relevant for distinguishing habitual angels. Future research could refine these distinctions.

The quantitative and qualitative results of the deal generation data indicate that the pursuit of angels' heterogeneity may be more productive using something other than the passive/pro-active framework. The multi-variate analysis produced three types of deal generation. Scholars should consider other perspectives such as Kirzner's (1997) entrepreneurial

alertness and Fiet's (2002) investment in specific information that are robust theoretical perspectives with which to approach future research in deal generation. This research pursued the formal venture capital approach largely because Fiet's major work in the area was not released until 2002 (after data collection). Ardichvili, Cordozo and Ray (2003) have recently proposed a theory of passive search that is heightened by, or a result of, entrepreneurial alertness (Kirzner, 1973) which, they suggest, is a more powerful determinant of discovery than the level of activity of the search. The importance of testing these theories has found support in this study.

Cognition should play a larger role in future studies. In this study, cognitive heuristics identified a variety of significant distinctions in a variety of different tests than either motivations or deal generation qualities. This study's findings along with the increasing role of cognition in entrepreneurship research (Baron, 2004b; Busenitz & Barney, 1997a; Zacharakis & Shepherd, 2001) should be sufficient to underwrite this suggestion.

Overconfidence was significant in both the regression with habitual behaviour as the dependent variable and in the regressions with success as the dependent variable. The heuristics findings suggest there are benefits to be acquired from accumulating data from comparison studies of angels and non-angels (as in Busenitz & Barney, 1997a) and angels' heuristics compared to other types of investors (as in Baron & Markman, 1999). Comparison data using other groups might include family investors, venture capitalists, entrepreneurs, or institutional investors.). In addition, replicating the study with more measures would strengthen the findings. Longitudinal studies that examine the endurance of cognition by angels over time would allow us to assess whether these heuristics vary or whether they are relatively permanent.

9.7 Conclusion

One of the novel features of this data set is the ability to compare novices' first investments with habitual angels' first investment while also allowing for the review of subsequent investments. Previous studies of novice and habitual behaviour have been criticised for comparing novices' first investments with habituals' most recent investments (Rosa et al., 1996). In addition, investigating the subsequent investments of habitual angels provided observations regarding learning. The key findings of this study indicate that there is reasonable evidence that angels who go on to become habitual angels are noticeably different from novice angels, in a number of ways, at the level of their first investment. Having said that, however, there are still areas where angels appear to learn as they make subsequent investments. The appraisal qualities that determine investment success are those that would be expected, however habitual business angels do not seem to apply these qualities to their appraisal activities. Fortunately, successful performance on previous exits is not a prerequisite for re-investment by business angels.

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