At the Individual Level: Outlining Angel Investing in the United States

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This paper represents a summary of primary empirical research on angel investing across the United States. Data is based on responses from 121 angel investors to a detailed survey reporting on 1,038 new venture investments and 414 exit events from those investments. These investors currently have approximately $100M invested in 624 ongoing new ventures. The one of a kind data set consists of investor responses covering their experience, due diligence efforts, approach to new venture development, as well as the characteristics of the ventures in which they invested, and their investment outcomes. Highlights of the study include:

PROCESS

- 34% of the deals were done at the seed stage, vs. 2% for formal VC's.
- 51 hours were spent in due diligence per investment, on average.
- Investors averaged nearly 14 years of entrepreneurial experience.
- 30% of their time was spent with ventures in which they had already invested
- Investors with a greater concentration of investments in seed stage deals source more deals through personal friends and also do significantly more due diligence prior to investing.

OUTCOMES

- Nearly 2/3 of angel investments resulted in negative returns.
- Concentration in early stage investments was significantly related to *fewer* failures.
- Participation post investment is moderately related to investment success.
- Investors that make more investments through personal relationships experienced more investment failures.
- The estimated cash multiple, estimated, is 2.9 with a holding period of 5.7 years for successful investments.
- A focus on control, efforts to deliberately construct market elements, rather than prediction, efforts to position for success based on forecasts, significantly reduces losses.

Angel investing is the single largest source of private equity capital for new venture development. In dollar terms, it totaled $22.5B in 2004, $2B more than formal venture capital (Sohl, 2005). As angel investors focus their capital in early stage opportunities, this translates to over $6B in angel capital going to seed stage ventures compared to only $330M from venture capitalists in 2004. A tremendous number of entrepreneurs in the earliest stages of their new ventures are impacted by angel investors. In spite of its importance, only 1 study in the UK (Mason & Harrison, 2002) details any measure of their investment outcomes. This study is the first research of these outcomes in the U.S.

As I looked to understand angel investing little empirical data existed, particularly at the individual level, describing either their practices or their outcomes. As a result, I spent the last 2 years working with angel investors to watch, learn, and capture some empirical information on their early stage venture investing. This paper is an attempt to simply describe what I've found. It covers the activities of 121 angel investors reporting over 1,000 investments and 414 exits from those investments. I begin by describing the method of the study, and reporting descriptive characteristics of the investors in the sample. I then look at different aspects of their approach to new venture investing, and the outcomes achieved in those investments.

The study followed well-established protocol for survey research. Initially, discussion and learning formed the survey, which was then fine tuned through feedback from pilot testing and then used in large scale data collection across the United States. Susannah Malarkey and The Alliance of Angels in Seattle were very supportive in this developmental stage; initial surveys were developed and talked through with their members, and insured that the questions and method of response allowed them to accurately report their experiences. Subsequently, data collection has spread geographically. Many thanks go to all of the groups who have participated, particularly their group directors, and especially to John May and the Washington DC area angel investors, and Warren Hanselman and the Tech Coast Angels in San Diego.

The Sample

75% through Angel groups
25% through online network

121 Angel investors
1,038 investments made
414 exits of those investments

The majority (75%) of the present sample was reached in cooperation with 12 angel investor groups in 8 different states. Contact was made through the endorsement and involvement of the groups' directors, who handled communication with members, keeping contact information strictly private. Participation was voluntary, and the information was gathered from the perspective of the individual, not the group, focused on their history in new venture investing both within and beyond the group. The remaining 25% of the sample was reached through a survey to 150 members of an online investment network named NVST, a national forum connecting investors and entrepreneurs. These 125 members are active and accredited private equity investors.

Comparative Benchmarks
20% exit at over 100% IRR
63% exit at a loss
71% seed and startup stage
73% less than 2 years old
50% of deals through friends
$210K per investment

The number of respondents to the survey from both sources was 121, giving an overall response rate of 23%. While a higher percentage is of course more desirable, this is on par with prior research. With any survey, one of the concerns is self-selection bias, in this case that investors might only respond if they had been successful overall, and/or only report their positive returns. Empirically, this does not dominate the present sample. The overall sample shows successes in only 20% of their investments, and the investors report having lost money in 63% of their investments (the remaining 17% fall into small but positive returns). This is in line with the little data that exists on venture capital ventures (rather than funds) as well as a study of UK angel investors. Also, the stage emphasis (71% occurred at the seed & startup stage), emphasis on finding deals through personal relationships (50% of their investments), and the dollar size of their investments ($210K / deal) are all comparable to earlier case study work done with angel investors. (See Prowse's 1998 article in the Journal of Banking and Finance and Amis & Stevenson's 2001 book titled Winning Angels for some additional detail.)

While continuing research with more angel investors will certainly provide an even more robust picture of this market, the present sample represents the only data of its kind. The process, response rate, and comparable descriptive statistics to other venture investors suggest that it likely represents a reasonable picture of angel investors.

With this groundwork in place, we can now consider additional details. The information I gathered falls into five categories: investor experience, characteristics of their venture investments, due diligence efforts, post investment participation, and investment outcomes. The remainder of the paper proceeds in that order.

EXPERIENCE/ACTIVITY

I looked at experience in two ways: experience as an investor, and experience as an entrepreneur. Significant entrepreneurial experience was the general rule. On average, these investors founded 3 ventures, and worked over 13 years as an entrepreneur. Investment experience varied more broadly, on average each investor had invested in approximately 9 new ventures, and had been making new venture investments for 10 years. On an annual basis, investors executed just under 1 deal per year, and remained involved in those investments for nearly 5 years on average.

Average Experience & Activity

Entrepreneurial:
3 Foundings over 13 years

New Venture Investing:
9 investments over 10 years

Currently:
$1.3M in 6 ventures
18% of personal wealth

Their experience, of course, is ongoing. **At present, these investors hold $1.3M in new venture investments spread over 6 ventures, on average. This represents nearly 20% of their personal wealth** overall, which is surprisingly but perhaps temporarily high. "Temporarily" high because the denominator in that ratio -total personal wealth- has declined with the markets generally over the past several years, after most of the cash investments had already been made. Which is to say, investors had not targeted 20%, it turned out that way after the fact. At the same time, rather than having an alternative target, there generally was no explicit target for allocation to new venture investments. The emphasis was on the quality of the opportunity rather than working to place the proper amount of money in this new venture category. I turn now to the characteristics of these "quality opportunities" that attracted investment.

DEAL CHARACTERISTICS

Certainly a critical factor in investment outcomes is the characteristics of the investments that are being made. I collected information on several factors attempting to characterize the investments made by each investor. From existing research, primarily with venture capitalists, a few items stand out as particularly interesting: the industries in which investments take place, the venture's stage of development when the investment is made, the existence of prior investors vs. being the "first money in", and the source of the opportunities.

Each investor reported the industries in which they had invested. Software and information technology were the most common areas of investment, with ½ of the sample making investments in those areas. These were followed by Biotechnology, Internet, Hardware, and Telecom; with about ¼ of the investors making investments in these areas. One interesting questions is the notion of specialization vs. diversification in early stage investing. Each investor operated in only 2 or 3 different industries, generally from among those mentioned above, which is relatively specialized. Within that, 3 primary emphases emerged: computer related technology (software, hardware, internet, and information technology), healthcare related (bio-technology, healthcare, health care products), and what might broadly be considered "non-technology" (manufacturing, real estate/construction, retailing, and the like). Investors tended to focus their investments within one of those categories, providing evidence that these investors tend to specialize.

Characteristics

Industry: tend to specialize
- Computer Related
- Healthcare related
- Non-Technology.

Stage: Very early
- 34% Seed vs. 2% seed for VC's

Prior Investors: Frequent
- 58% of investments had other prior outside investors

Primary Deal Source: Friends
- 40% through friends
- 28% through angel groups

Investment stage is also an important factor in new venture investing, and is generally considered a proxy for the uncertainty of the opportunity. Over the course of the last 10-15 years, venture capital has moved further away from seed and start-up opportunities. This has assisted in more efficiently placing the substantial sums of money that have come into the industry, and moving away from the extreme uncertainty of the outcomes from very early stage opportunities. Angel investors, on the other hand, are not under that same pressure to place capital, and often have capital limitations (relative to VC funds) that require them to work with earlier stage ventures. This concentration of deals in earlier stage situations, in combination with a less "disciplined" approach to investing, has caused many in the venture capital community to forecast disaster for angel investors. This sample of angel investors made 71% of all of their investments in ventures that were at the seed or startup stage. 34% of investments were at the seed stage compared to less than 2% of formal venture capital. Stage relates very strongly to the age of the firms, 73% of firms were less than 2 years old (44% less than 1 year) at the time of investment. Angel investors' early stage focus is clearly evident.

While industry and stage are important venture-related characteristics, the existence of investors prior to one's investment is an important investment-related characteristic. On the one hand, the social learning from the actions of earlier investors, what one learns from other's decision to invest after looking closely at the opportunity, suggests that having prior investors involved should help increase one's confidence in the quality of the opportunity. On the other hand, the dilution of ownership, and coordination of the interests of a larger set of owners can make earning tremendous returns more challenging. Consequently, some investors focus on "being the first money in" while to others this is not a critical factor. 59% of investments occurred where there were prior investors

(std dev: 35%). Initially I considered this number to be driven up by the participation of angel group members in the sample, but the independent angel investors actually averaged higher on this (64%) than the group member investors (53%).

Source of deals is another important investment-related characteristic. I asked each investor how many of their investments came to them from various sources to get an idea of the pattern of deal flow among angel investors. The categories I asked about included: friendships with the entrepreneurs, entrepreneurs referred by friends, referrals from business contacts, prior working relationships with the entrepreneur, and participation with your club/investor group. The categories were not mutually exclusive. 40% of the investments were through personal friends (the first two categories), 23% through business contacts, 9% through prior work relationship with the entrepreneur, and 28% stemmed from their membership in an investor club. This points out that even in angel groups substantial deal flow is moving through their members that doesn't necessarily reach the group. It is certainly important to remember, however, that this 28% is understated to some extent, given the newness of so many of the angel groups; it should increase over time.

These deal characteristics provide a useful starting point for understanding the investment opportunities and outcomes of angel investors. Published research on formal venture capitalists also suggests that the process of due diligence, comprehensive research into the investment opportunity, is likely to impact investors' ability to select great opportunities out of the pool of pending failures.

DUE DILIGENCE

One of the areas of concern people have with angel investing is the extent to which it is done at arm's length and with proper analysis. How close is the approach of angel investors to the "friends, family and fools" model versus how close are angel investors to the formal venture capital model? To that end, respondents completed a set of questions dealing with the extent, areas of focus, types of analyses, and motivations of their due diligence efforts. Starting broadly, the overall amount of due diligence performed totaled 51 hours per deal. Within that number, a significant difference exists between angel investors involved with groups, and independent investors, with the former averaging 42 hours vs. the latter's 58 hours. This may point to efficiencies in working through a group where deals are often pre-screened, and efforts can be shared.

51 hours of diligence per deal

Group affiliated angels:
42 hours per deal

Independent angels:
58 hours per deal

That total effort consisted of the time spent on research in four different aspects of an opportunity. Both group and non-group affiliated investors split their efforts similarly. Investigating the customers and market potential was the primary focus, consuming over 1/3 of the total time, followed at just under 1/3 of the total time by efforts to investigate the technology of the venture. 22% of the effort went into evaluating competitive issues, and 12% of the time was spent checking the references of entrepreneurs.

Due Diligence

Spend 35% of diligence effort on customer & market analysis.

Identifying short term cash needs was the most important analysis.

In addition to the time spent evaluating opportunities, the methods and objectives of due diligence are also interesting. I asked each investor to rate the importance (7 being very important) of the following types of analysis in their due diligence efforts: Net present value (NPV) analysis of expected cash flows, cash flow forecasts and "multiples" valuation, estimates of specific

short term capital needs, and breakeven analysis of the operation. NPV analysis was scored the least important item, 3.3 out of 7, but also had the largest standard deviation, suggesting particularly large differences in the use of this method across investors. Conversely, the most important analysis was to identify the short term cash needs of the business, 5.5 out of 7, which was followed by identifying the break even points for the business, 5.0 out of 7. Creating cash flow estimates and potential multiple valuations was rated just below the break even analysis at 4.6 out of 7. In each case there was significant variation in response; some investors simply don't do some types of analysis. The overwhelming motive for these analyses was to understand the cash needs of the venture, which was ranked at an average of 1.7 (1 is high priority, 4 is low priority). Setting financial goals was next at 2.5, followed by calculating the value of the venture at 2.3.

PARTICIPATION

30% of time spent with firms in which they've already invested.

I am most involved in: (7 is highest)

5.1	Monitoring Performance
5.0	Informal Sounding Board
4.7	Formulating Strategy
3.9	Interfacing with Investors
3.8	Recruiting Managers
3.5	Formulating Processes

Participation, as I use it here, refers to investor efforts with ventures in which they've already invested. One of the primary motivations of this study is to understand the ways in which the new venture investors influence the outcomes of their investee firms. This idea is critical in new ventures, but is in stark contrast to larger markets where the outcomes of the firms are primarily viewed as independent of the contributions of specific investors. In new venture investing, concentration of ownership and opportunities to actually get involved with the venture often attract investors to add value beyond their capital; for many angel investors this is a particularly rewarding feature.

Rank of Importance (1 is highest)

2.8	Informal Sounding Board
2.8	Formulating Strategy
3.1	Monitoring Performance
3.7	Recruiting Managers
4.0	Interfacing with Investors
4.3	Formulating Processes

I ask specifically about the extent of their participation, as well as their areas of involvement, and their evaluation of the importance of various types of participation. **Overall, these investors spend about 12 hours per week on new venture investing; over 30% of that time is spent with ventures in which they have already invested.** In that time, these angel investors reported that they are most involved in monitoring the financial performance and in being an informal sounding board for the managers of the new venture. This is followed by efforts to formulate business strategy. The ranking of the importance of these efforts is somewhat different, where time as a sounding board and efforts to formulate business strategy are the most important way that they participate with the venture, followed by monitoring of financial performance.

INTER-RELATIONSHIPS

Expertise, typical deals, due diligence efforts, and approach to participating in the venture post-investment provide a useful picture of how they operate in new venture investing. At this point we can explore some of the interesting relationships between these variables and then discuss investment performance. The inter-relationships help validate the variables as measured, and also address some interesting questions about new venture investing.

One might reasonably expect that as the amount of investment per deal increases, the percent of their investing time spent working with those existing investments increases as well. The investor is likely to **take a greater interest/role when larger amounts of money are riding on the success of the venture**. This is the case; they are significantly correlated.

Another interesting question is whether due diligence effort upfront reduces the extent to which the investor participates in the venture post investment. Empirically, the opposite appears to be the

case. **As investors spent more time doing due diligence, they also tend to participate more with their existing investments**. This suggests an active vs. passive split of investor approaches. In the sample, the top 1/3 spent an average of 28 hours per week on new venture investing, while the bottom 1/3 of the sample spend only 2 hours a week.

Finally, focusing on seed stage investments is related to several interesting variables. Even in this sample concentrated on very early stage investments, due diligence efforts significantly increase as investments occur in earlier stages of development. Additionally, investors more focused in seed stage opportunities have a greater level of industry focus, and find more of their opportunities through friendships with the entrepreneurs.

Correlation with % of Deals in Seed Stage	
0.27	Total Due Diligence
-0.38	Industry Breadth
0.32	% of deals through friendships

These relationships, of course, don't yet connect to the outcomes that these investors experience. For example: Is increased due diligence in earlier stage deals connected to success? Does industry focus increase investment losses? To set the stage for these questions, I'll initially describe the outcomes experienced by this group in total.

INVESTOR OUTCOMES

In a perfect world, every investor would report the amount and date of their cash outflows and inflows for each new venture in which they invest. I could then calculate internal rates of return in great detail. As you might imagine, this is not a perfect world, and several issues make measuring investor performance more challenging. First, not all angel investors track their cash inflows and outflows in great detail, and they occur over a number of years so they aren't readily accessible in that detail. As a result, gathering data for the 1,038 investments and 335 exit events in this data set at that level of detail was unrealistic. In response, one would like to gather perhaps just a summary statistic per exit event, internal rate of return, and use that as the measure of success. However, all angel investors don't think about their outcomes in the same fashion. There are no formal reporting requirements to limited partners, and therefore no standardized method or statistic, not to mention the difficulty in recalling the exact IRR value for each deal. Finally, measuring only IRR limits the outcome data to exited investments, which is generally a good idea, but does leave out a significant opportunity to look at outcomes more broadly.

With these things in mind, I measured outcomes in two ways: categories of IRR achieved in each exit, and investor evaluation of the opportunity as a success or failure. The IRR categories allow for a margin of error in the details of IRR calculation, and are also in line with the method used in the only other study reporting returns of individual angel investors by Mason and Harrison (Journal of Business Venturing 2002). The perception measure of success/failure further generalizes beyond technical calculation, and also captures outcome information for opportunities where there has not yet been an exit.

Investors' evaluation of their outcomes as successful or not provides an initial look at their performance. Of the 1,038 investments made by these investors, 22% were considered successful, 25% as having failed, and the remaining 53% as "too early to say." Research into venture capital investment returns shows that exit events help demonstrate the true value of investments. As a rule, evaluating outcome information only for exited investments drives performance assessments down.

Success & Failure
Percent of investments that

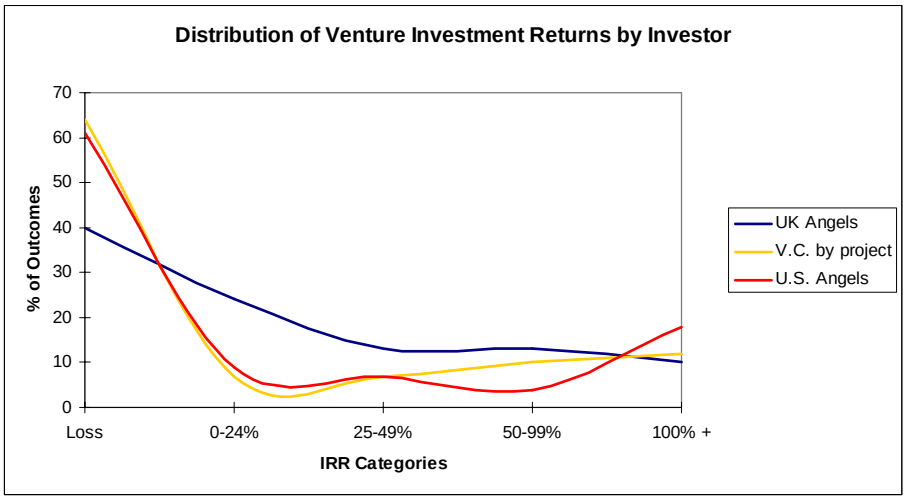
Succeeded:	23%
Failed:	26%

To that end, I asked specifically about rates of returns only for investments from which they have actually exited. Investors reported the number of their exits that occurred within a set of IRR categories: Total Loss, Large Loss (-50% to -99% IRR), Small Loss (0% to -50% IRR), and then gains, 0% - 25%, 26% to 49%, 50% to 100%, 100% to 299%, and 300%. Of the 414 exits, nearly 50% of the investments resulted in complete loss of invested capital, and over 63% returned less than their invested capital, the negative IRR categories, while 19% of the investments returned more than 100%.

# of exits in each IRR Category

Total Loss	Large Loss	Small Loss	0 to 25%	26 to 49%	50 to 100%	100 to 300%	>300%
200	33	27	29	25	18	33	49

To put this into perspective, we can compare this distribution of returns to one other study of individual angel investor returns, and a study of VC returns by venture rather than the IRR of the overall VC portfolio. Mason and Harrison (Journal of Business Venturing, 2002) report the results of survey work they did with 60 angel investors in the UK, which provided many useful guidelines for the present study. Additionally, Murray (Venture Capital Journal, 1999) represents a unique look at venture capital returns to the individual investment outcomes inside the portfolio. The table below shows how these studies relate to the findings in this U.S. angel data. Broadly, these results resemble the returns of the venture capital projects, with their returns being more extreme than the distribution of the returns of the UK Angel investors.



As one can imagine, the years in which the exit event occurred had a significant effect on the returns that were achieved. The timing of these exits may be responsible for the more extreme outcomes in comparison to the UK angel outcomes. The exits in this sample occurred between 1985 and 2004. The best years for high exit returns were 1994 and 2000, with the returns for periods over the last 20 years laid out in the table below. Using an IRR estimation method, described in the following paragraph, 2001 was clearly painful, averaging -45%, with 2002 and 2003 improving to 15% and -3% respectively. There is certainly a time effect in the data, although the overall correlation of time and return is not significant.

	85-'93	94-'97	98-'00	01-'03	2004
Avg IRR	93%	59%	90%	-7%	76%
# of exits	10	15	44	70	18

Beyond the IRR categories, I **estimated** an overall average rate of return for each investor in our sample. Estimate is the key word. While the IRR categories clearly enable us to report the distribution of their outcomes, they suffer from two challenges. First, for the >300% category, there is no end point, so it is not possible to know if the return was 301% or 700%. Second, investment magnitude is not reported for each outcome, so it is not possible to weight the distribution of outcomes by the size of the wins and losses; i.e. a 100% loss of $1M vs. a return of 300% on an investment of $10M. Without the specific size of those investments, precisely calculating the return is not possible. As mentioned earlier, gathering data at that level of detail in this study proved unfeasible.

With that said, two assumptions make estimation possible: 1. assume a relatively consistent investment size across an investor's set of investments, and 2. assume the mid points of each category and a max 400% IRR for the last category. **With those assumptions, the average rate of return to these angel investors is 14%.** The variance underlying this average is immense, however, at 74%. If those two assumptions have an influence it is to understate the rate of return. Investors occasionally do achieve returns greater than 400% when things turn out great, and they may well have some ability to selectively increase their investments in stronger opportunities. The more central concern with that estimated rate of return is the sample size and any unknown self selection issues. As this is a relatively small sample it is simply a first estimate of returns to angel investing in the U.S. On a cash to cash basis with the same assumptions made, the multiple is estimated at 2.9 thus far, with a holding period for successful investments of 5.7 years.

RELATIONSHIPS TO OUTCOMES

This paper is intended to simply describe the activities of individual angel investors. At this point we have an outline of many important factors, their experience, typical angel investment opportunities, the due diligence efforts they engage in, participation post-investment, and angel investment outcomes. While this is certainly interesting, it begs many additional questions. As I conclude this paper, I want to point out some of them and briefly describe what the data suggests.

Is investing in early stage opportunities a more dangerous proposition?
It is generally perceived as inherently more risky to invest in earlier stage opportunities. The business models are less stable, the management team less complete, and there is more uncertainty regarding customers and their willingness to work with the new venture. In this sample, however, complex regressions show that investing in seed stage opportunities is significantly related to a reduction in exits that occur at a loss, and an increase in the percent of an investor's deals that are successful. The regressions include overall activity, experience, deal characteristics, due diligence, participation, and industry breadth. *It appears that for these angel investors, a stronger focus on early stage opportunities is not a more dangerous proposition, and may in fact leverage the unique talents of angel investors.*

Does industry diversification improve outcomes?
Portfolio diversification is a very important factor in large market investing. One of the many risk factors in private equity investing is that there is relatively low diversification. In angel investing diversification may be less relevant, as the number of investments is generally too low to be considered a true portfolio, and the investors are much more involved in the ventures. In this data, *the breadth of industries in which investors were involved had no statistical relationship to their investment practices and outcomes.*

How does due diligence impact investor outcomes?

Investors spend a significant amount of effort researching the opportunities in which they invest. In this sample, investors spent an average of 51 hours on due diligence efforts prior to investing. Early stage investing, however, occurs in a very uncertain setting, where research and predictions stemming from that research are incredibly challenging to do well. On the one hand, executing more due diligence may help to deal with these challenges; on the other hand, it may simply be too challenging to have a clear impact on investor outcomes. In this data, *the time an investor spent on due diligence had moderately significant relationship to an increase in both homeruns and negative exits.* Their may also be some curvilinear effects, perhaps a threshold level, or minimum level of due diligence that does appear to reduce investment failure. A larger data set is required to specifically establish any curvilinear relationship.

How does investor participation in the venture affect outcomes? Investor participation post investment has some similar attributes to due diligence, in that investor effort is exerted to deal with the uncertainty involved in working with very early stage ventures. In this data, participation is significantly related to a reduction in negative exits. As the sample size increases effects like participation and due diligence can more effectively be teased out.

Due diligence and participation are specific areas where additional data is critically valuable, as interactions between them and experience, stage, and even the particular nature of their efforts are very interesting. To begin looking at the specifics of an investor's interaction with their ventures, I gathered data on their approach to developing new ventures. One of the central aspects of my research regarding strategy making under uncertainty involves non-predictive control strategies. In this study I characterize their focus prediction vs. control and explore how these strategies relate to their outcomes. *In regressions, an investor's emphasis on control, their interest in directly influencing the future of the venture while avoiding predicting it, is strongly related to their outcomes, particularly reducing investment failures.*

For more on non-predictive control strategies, see this working paper: http://www.willamette.edu/~wiltbank/NonPredictiveStrategyRevision.pdf.

The descriptions of angel investing in this paper provide a systematic look inside angel investing at the individual level. This study makes a particular contribution by providing the first look at individual angel investor returns in the United States; reaching into 15 different states, and individual as well as group-affiliated angel investors. The participation of additional investors in studies such as this will enable further analysis and more robust results. This will ultimately lead to additional insights for successfully approaching new venture investment and development. Angel investing plays a critical role in the creation and success of tens of thousands of new ventures every year. Understanding how it is done, and how to do it well is a critical priority.