

Angel Investing Worth the Effort?

A Study of Keiretsu Forum

Geoff Roach

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Introduction

One of the most difficult components in starting and growing a new enterprise is acquiring capital and other resources. The lack of funding can lead to cash flow problems, missed opportunities, and shutdown of the fledgling enterprise (Van Auken, 2002). Funding for many new enterprises comes from a large, yet relatively unidentified, group called angel investors. Angel investing brings together two different areas of study: entrepreneurship and equity investing. Angel investing supplies more capital to early-stage companies than do venture capital firms, and this capital drives most of the economic growth and job creation in the United States (Wiltbank, 2005). In spite of this impact, the dynamics of angel investing have received relatively little attention from researchers than the effect on economic growth should warrant.

This study is one of the few to examine the returns from angel investing and one of the first to investigate the dynamics of angel investing groups. The focus is on angel investing in Silicon Valley and the returns from the investments made by an angel group, Keiretsu Forum, and the processes used by the group to obtain those returns. Understanding the risks, returns, and dynamics of angel investing should encourage greater participation in the early stage investing ecosystem and foster economic growth (Morrisette, 2007).

The Importance of Angel Investing

Angel investing draws on many different areas ranging from theories such as portfolio theory and risk management to the practical experience of venture investing and entrepreneurship. The term angel comes from the theater in New York during the early 20th century. Investors in Broadway shows would make high-risk investments to produce shows to earn both financial returns and gain status in the community. Today, the term angel usually refers to high-net-worth individuals who make investments of time and money to help startup companies through their initial stages of growth (Lange, Leleux, & Surlemont, 2003).

Innovation emerging from investments made by angels is important. Utterback, at MIT, studied the process of innovation and found that in no case has the leader in a market led a radical innovation (Preston, 2001). Most revolutionary breakthroughs have come from firms of less than 500 people. Small companies are more effective in producing innovations that have high value and can create new markets or can change old ones (Baumol, 2004). Entrepreneurs financed by early stage capital develop and introduce new technologies, products, and services that lead to the creation of the majority of new jobs. In turn, economic growth increases through cost reduction or additional production (Proimos & Murray, 2006). The performance of early stage investment capital and the funded companies needs to be a concern to entrepreneurs, investors, and public officials. Economic growth depends on entrepreneurship and innovation. The fuel for this growth is the risk capital that is required for the formation and growth of new entrepreneurial ventures (Wetzel, 1987). Angel investors provide the risk capital that propels the creation of new jobs in the United States. Venture capital firms depend on angels to finance and shepherd

new companies until those companies reach the point where a venture fund can invest. Without angels there would be far fewer deals for venture firms (Morrisette, 2007).

Investing in early-stage companies involves high degrees of risk. Angels, the risk they incur, and the returns they receive have historically posed problems for researchers. Angels may invest for non-economic reasons and may not be rational investors in economic terms. Angels have also been hard to investigate because many make only single investments or invest infrequently. Many angels do not understand the returns from their investments. Yet this same class of investors is the principal source of capital at the seed and startup stages of companies (Baty & Sommer, 2002). Estimates show that three times more capital is available to be invested than commitments made (Van Osnabrugge, 1998).

Research Questions

The nature of the current study led to several questions involving angels, angel groups, entrepreneurs, and the investment process:

R1: How do returns from angel investing differ from those that could be obtained from investing in a broadly diversified index fund?

R2: What processes do angel groups utilize that may make the groups more effective at screening and selecting potential investments than early-stage investors in general?

The first research question examines one of the central motivations of angel investing. According to financial theories such as the Capital Asset Pricing Model (CAPM), risk and return should be proportional. More specially, CAPM holds that the market does not compensate investors for assuming non-systematic risk (Sharpe, 1964). Angel investors assume non-systematic risk with the hope of earning higher returns. If angel investors cannot achieve higher returns than those that can be gained from investing in a lower risk, broad-based mutual fund, then angels may have been investing without any visibility as to potential returns. If returns are not better than market benchmarks, there may be other reasons such as the desire to help entrepreneurs or other social functions that influence the investment decisions.

The second research question could be restated to ask the following: if angels and angel groups do not always make good investments, do the groups at least enable angels to avoid making bad investments? Given the small number of investments that most angels make, a high degree of diversification to eliminate specific risk from the angel investments is not possible. If returns from angel investing match those of the broad market indices, can angel groups help angels avoid cases where the angels may lose their investments? Conversely, the mindshare of the angels in a group should enable the group to decide not to decline an investment in an enterprise that later becomes a great success. With the different backgrounds of angels in a group, can the collective mindshare of the group attract a diverse deal flow, defined as a collection of potential investments, and assess those deals so that some diversification can be obtained if desired?

As angel groups expand and interact with other groups in different geographies, it may be possible that more capital can be raised and that better deal flow can be achieved benefiting both the investors and the entrepreneurs. This concept contradicts the conventional wisdom that angels and other venture investors only invest in companies in local geographies. With the communications and information management technologies that exist today, this barrier may be overcome. The cooperation of angels in geographically dispersed groups may also lead to better control and communication mechanisms.

Background of the Study

The purpose of this case study was to determine the risk and returns present in early-stage investing using internal rate of return (IRR) on invested capital as the measurement and to examine how the processes used by an angel group in Silicon Valley impact those returns. The focus of the current study was on the investments that angels in an angel group headquartered in Silicon Valley, Keiretsu Forum, have made in companies primarily located in the Western United States in from 2000 through 2006. Since investments made by individual angels are extremely hard to capture, investments that have been facilitated by the angel group were studied.

The motivations for angel investing contain both economic and non-economic factors leading to the need for a case study. The information on returns from investments focused on internal rate of return (IRR). IRR is the discount rate that equates the present value of the expected or actual cash outflows with the present value of the inflows of cash (Kaplan, 2003). The study provided the opportunity to explore the dynamics of angel group interactions to determine if angel groups bring any additional value to the investment process. Previous research has shown that angels also invest and join into groups for reasons other than economic or potential high-returns (Mason & Harrison, 2002).

Data were collected in several stages. Most of the data on investments and returns from those investments was in the possession of the management of the angel group. In some cases, the data on individual investments was missing or incomplete. In those cases, the data was obtained from either an angel making the investment or from the management of the company in which the investment was made by email or phone call. Information on the investment processes used by the angel group was obtained by attending meetings of the investment group, by participating in the steps of the investment processes, and from documentation provided by the angel group or on the angel group website.

The returns component used investments and liquidity events to compute IRR for investments made by angels. The few existing studies of angel investment returns use IRR as a measurement of investment and portfolio return. IRR is widely accepted in the venture financing arena as a method for measuring the effectiveness of investments. The use of IRR provides the opportunity for comparison to other benchmarks (Aernoudt, 2005; Mason & Harrison, 2002; Wiltbank, 2005; Wiltbank & Boeker, 2007). One issue with using IRR to track angel investments is that angels do not track IRR in a consistent manner, and many do not track return rates at all (Wiltbank, 2005).

In order to standardize IRR calculations, the data analyzed consisted of the date of investment, amount of investment, date of liquidity event or re-valuation of investment, and value of the return. A liquidity event is defined as flow of cash or marketable security to the investor from the entity. Examples of liquidity events include initial public offerings (IPO) of company stock, dividends, other cash payments, or receipt of publicly tradable stock as the result of a merger or acquisition. Due to the relatively long holding period of early-stage investments, many investments may not have reached a liquidity event. In those cases, the IRR calculation used the value established at a subsequent investment such as a later funding round by other investors such as other angels, venture capitalists, or corporate entities. Companies that experienced bankruptcy received a value of zero on the date of that bankruptcy.

The study compared returns to industry standard benchmarks such as the Standard and Poor's 500 (S&P 500) and the NASDAQ Composite Index. The S&P 500 covers approximately 75% of the publicly traded equities in the United States and is weighted by market capitalization. Companies in the S&P 500 need to have a market capitalization of at least \$5 billion and more than 50% of the stock needs to be publicly available (Standard & Poor's, 2007). A second benchmark is the NASDAQ Composite Index which measures all NASDAQ domestic and international common stocks traded on the NASDAQ exchange. The NASDAQ Composite Index contains over 3,000 companies and covers many of the industries such as technology that are the focus of angel investing (NASDAQ, 2007). In addition to the wide use of these two indexes as benchmarks of market performance, mutual funds such as the Vanguard Index 500 and the Fidelity NASDAQ Composite Index Tracking Stock Fund represent opportunities for investors to buy an investment that mirrors the performance of those indexes (Fidelity Investments, 2007; Vanguard, 2007). Index funds such as these represent potential alternate investments that angels could make.

The case study focused on the investment process that angels and angel groups use. Part of the investment process involves screening potential deals. Angel groups are designed to use the collective intelligence of the group's members to make more effective choices. The current study collected information to analyze the effectiveness of eliminating bad investments and accepting good investments. The potential for errors such as company bankruptcies and failing to invest in a successful venture should be reduced using the collective mindshare of the group. The study examined the willingness and the ability of the angels to syndicate deals which potentially leads to better investments and increased returns.

Keiretsu Forum

Keiretsu Forum claims to be the world's largest angel investor network. The term *keiretsu* is Japanese in origin and describes a group of companies working together with interlocking relationships and wide reach and influence. This angel group adopted the name to convey the similar idea of people and companies working together to provide financing and resources in order to increase the chances of success for startups. In early 2008, Keiretsu Forum had

approximately 750 members in 16 chapters throughout the world ranging from its origins in the Silicon Valley area to Southern California, the Pacific Northwest, Denver and internationally in Beijing, Barcelona, and London. Since the founding of the group in 2000, angels in Keiretsu have invested over \$180,000,000 in 200 companies. Keiretsu Forum also has a strong social component and supports a charitable foundation (Keiretsu Forum, 2008).

Keiretsu Forum differs from other Silicon Valley angel groups in that investments made by members of the group are not only in technology companies but also in consumer products, health care, life sciences, real estate, and other areas. Keiretsu is also different in that it represents a network of angel groups now spread over North America, Asia, and Europe. Each chapter is limited to 150 members. According to the angel group management, this network enables access to more capital than typical angel investments and deals syndicated across chapters are not unusual occurrences. Besides more capital, the network of chapters also provides access to resources through the members' personal networks. Deal flow for members can also originate from geographies outside of the members' local area. The network of chapters also provides additional industry-specific knowledge and collaboration among members (Keiretsu Forum, 2008).

Keiretsu Forum management claims that investments typically range from \$250,000 to \$2,000,000 with individual investments ranging from \$25,000 to \$200,000. Members collaborate on sourcing deals, performing initial screenings, due diligence, and negotiation of deal terms. Members make individual investments, and the group does not invest as a fund or create separate legal entities such as a limited liability company (LLC) as investment vehicles (Keiretsu Forum, 2008).

Data Analysis

The data selection process attempted to use all available data from the angel group investments. Keiretsu management estimates that \$180,000,000 has been invested in 200 companies (Keiretsu Forum, 2008). Investments made in 2007 or later were excluded from the returns survey. An initial sampling of the 2007 and 2008 investments indicated that the length of time that had passed since the initial investment was not sufficient for an external event to occur in order to drive a valuation change. Some data were excluded due to incompleteness. Since Keiretsu does not invest as a group, there was no motivation for the management of the portfolio companies to report financials or changes in the company to the angel group. Over time, management changes and attrition in the angel group caused the connection between the angel group and the company to be broken. This data, less than 4% of the portfolio companies, were excluded from the IRR calculations.

Early-stage investments are represented by securities that are not publicly traded, and no pricing for the securities is readily available. To track the changes in the value of the angel investments, external events that caused a change in the valuation were used. This method of determining the value of an investment is consistent with the International Private Equity and Venture Capital Valuation

Guidelines as developed and propagated by the International Private Equity and Venture Capital Valuation Board (International Private Equity and Venture Capital Valuation Board [IPEVCVB], 2006). An exit such as an initial public offering (IPO), merger, or acquisition provides an external event that provides a new value for the investment. Similarly, an investment in the startup through a later investment provides a market validation. In the event that a company ceases operation, this external event causes the value of the company to be zero. In these cases, the event changes the value of the investment, but the change cannot be realized by the investor due to the illiquid nature of the underlying security. In the absence of any external events, the value of the investment was recorded as no change.

To compute IRR for the investments, four pieces of information were required. The date of the initial investment and the date of the subsequent change provided the time span of the investment, and the amount invested and the new value provided the absolute returns. From these four data points, IRR for the individual investments was computed. For example, an initial investment of \$100,000 made on January 1, 2003, that returns \$400,000 on January 1, 2008, would have a return of four times the initial investment. The IRR is approximately 32% or as usually stated, the investment returned 32% per year for 5 years. In a few cases, the exact date of the investment could not be discerned. Dates approximating the investment period were used with the effect of potentially understating the IRR on that investment.

Investments were grouped by the year of the initial cash inflow, sometimes referred to as the vintage year. Grouping investments by year was done to form a basis for comparison to an external benchmark. All the cash flows from those groups were combined into a single cash flow stream. From this cash flow stream, an IRR for the year was computed. Several reasons guide this approach. The first is an assumption that an investor has multiple choices as to the timing and amount of those investments. For the purposes of the current study, the hypothetical investor is making a number of investments and is interested in the total return from the resulting portfolio. The returns are staggered with different amounts and different dates making a simple average of returns meaningless. IRR serves the function of providing annualized rates of return (Johnstone, 2008). An example may help clarify this situation. The previous IRR example yielded an IRR of approximately 32%. If a second investment of \$50,000 is made on July 1, 2003, and returns \$150,000 on January 1, 2006, the IRR is approximately 55%. A simple arithmetic average provides a result of 43% but provides an invalid answer due to the different time periods of the investments. Combining the cash flows from the two investments provides a more realistic estimate of 37% by considering the timing of the cash flows.

Data for external indexes was obtained using closing values on specific days, generally the first trading day of the selected calendar year. To compute IRR for the market indexes, publicly traded index funds that track the S&P 500 and NASDAQ Composite indexes provided the underlying data. IRR for the indexes was computed using the differences in share prices in the index funds.

The cutoff date for returns was selected as March 31, 2008, due to the timing of the research.

Members of Keiretsu Forum provided information concerning the investment process and the procedures used by the members to make investments. Other information on the process and sample forms used in deal screening and due diligence came from the group's website. Additional insight into the process was obtained by participating in the deal screening, member meetings, due diligence, and deal term negotiating sessions. The data were collected by conducting observations as a participant to gather field notes.

Investment Results

The highly structured nature of the Keiretsu Forum investment process leads to the question of the returns obtained from employing the process. Using the assumptions described previously, over 120 investments in approximately 100 companies were analyzed. This analysis of the investments made by Keiretsu Forum angels yields the following results.

Table 1 provides the IRR on investments made in years 2000 through 2006. Investments made in 2007 or later were excluded from the analysis based on the assumption that too little time had passed between the time of the investment and the time of the analysis to realize significant changes in the investments.

Table 1
Internal Rate of Return of Keiretsu Forum Investments

Year	IRR
2000	20.38%
2001	21.32%
2002	28.24%
2003	26.20%
2004	32.46%
2005	14.55%
2006	20.13%

These returns represent a hypothetical portfolio consisting of Keiretsu Forum investments made in the years 2000 through 2006. The returns include investments returned to investors through initial public offerings, mergers, acquisitions, and other exits as well as unrealized returns from new valuation events such as later stage investments that either increased or decreased the value of the original investments. Included in the results are also any closures or bankruptcies where the value of the original investments were written down to

zero. These returns are hypothetical since no single investor participated in all these investments.

Comparisons

Comparing the results in Table 1 to those that could have been obtained in the major market indexes produces Table 2. Two widely available index funds were used as proxies for the market indexes. The Vanguard S&P Index 500 Fund (VFINX) was used in place of the S&P 500 index and the PowerShares QQQ fund (QQQQ) was used for the NASDAQ Composite 100 index. The returns for the mutual funds assume that an investment was made on January 1 of each year and the investment was redeemed on November 19, 2008. To provide a comparison that more closely matches the kinds of investments one finds in the S&P 500 and the NASDAQ, the Keiretsu Forum returns without the real estate investments included are also provided.

Table 2
Comparison of Keiretsu Forum Returns to Major Market Indices

	Keiretsu Forum	Keiretsu Forum - No Real Estate	S&P 500 (VFINX)	NASDAQ (QQQQ)
2000	20.38%	-2.01%	-6.82%	-14.32%
2001	21.32%	15.23%	-6.13%	-10.19%
2002	28.24%	6.80%	-5.49%	-6.01%
2003	26.20%	4.82%	-2.14%	1.59%
2004	32.46%	15.72%	-7.10%	-7.06%
2005	14.55%	8.52%	-11.36%	-11.61%
2006	20.13%	32.38%	-17.97%	-16.84%

Initial observations show that the Keiretsu Forum angels would have outpaced the S&P 500 and the NASDAQ Composite in 6 of the 7 years under study. Some additional analysis of the individual investments indicates that the highest IRR obtained was 300% with the lowest as -100%, a shutdown in which the investor lost the entire investment.

The Sharpe Ratio is used to assess how attractive an asset or a portfolio of assets could be given the risk involved in holding the portfolio (Sharpe, 2007). A Sharpe Ratio greater than 1 is generally considered to be an indication of an effective risk premium (Fulks, 2001). Computing the Sharpe Ratio for the hypothetical Keiretsu Forum portfolio yields a result of 3.39. Removing the real estate deals from the portfolio yields a Sharpe Ratio of .78. By comparison the

Sharpe Ratio for the same period on the S&P 500 and the NASDAQ Composite using the proxies previous described are -2.18 and -2.01 respectively.

While the comparisons of a hypothetical portfolio to the market indices are interesting, some additional analysis provides more useful and actionable information. As indicated earlier, two types of investing errors are possible. The first error is the possibility that the angel declined to invest in a company and the company later provided unusually high returns. A second type of error is defined as a company in which angels invested and the investment was inappropriate because the company subsequently went out of business or entered bankruptcy. This would cause the investment to be written off and the angels would lose their investment.

The failure rate of new business has been estimated to range from 24% to 34% after two years, approximately 50% after four years, and approximately 60% after six years (Headd, 2003). The overall closure rate in the Keiretsu portfolio for the period 2000-2006 is approximately 20%. The failure rate of Keiretsu companies is lower than the overall failure rates for startups in general. These results indicate that the screening processes and due diligence are potentially effective in reducing the number of potentially bad investments. Since not all angels participated in all the Keiretsu deals, the lower failure rate shows that a Keiretsu member has a better chance at not investing in a potential failure than those investments made in general.

An analysis was also performed on the companies that successfully passed the deal screening process, made presentations, and perhaps entered due diligence to examine the ability of the Keiretsu process to not pass on eventual winners. In the period 2000-2007, approximately 22% of the Keiretsu funded companies had a successful exit in terms of an IPO, acquisition, merger, or similar liquidity event. Less than 5% of the companies that passed through the Keiretsu process that did not receive funding had similar liquidity events. While it could be said that not receiving funding from Keiretsu could cause a self-fulfilling prophecy to occur, the presence of over a dozen other angel groups in Silicon Valley would indicate that if the investments were appropriate, the entrepreneur should have found funding from sources other than Keiretsu. The Keiretsu investment process has the effect of not only identifying potentially bad investments but also not bypassing potential successes.

One unusual aspect of Keiretsu Forum arises as a result of the multi-chapter aspect of the group. Research contends that angels only invest locally (Lange, Leleux, & Surlemont, 2003). Keiretsu Forum violates that commonly held belief by providing entrepreneurs the possibility to present to many chapters and by sharing screening and due diligence information among chapters. Over 30% of the investments made by Keiretsu members have come from members in different chapters and geographies. The result of this sharing is the availability of more capital for the entrepreneurs and the lowering of transaction costs for the angels.

Analysis of the amounts of funding obtained by entrepreneurs also provides some insight into the evolution from a single angel into a group and then a network of groups. Previous research indicates that investments from individual

angels can be as small as \$25,000 or as high as \$1 million with the range generally falling between \$100,000 and \$500,000. Groups of angels can raise the total investment to the \$2 million to \$5 million level with the lower end of the range more common. (De Clerq, Fried, Lehtonen, & Sapienza, 2006; Lange, Leleux, & Surlmont, 2003; Linde & Prasad, 2000). Investments made by Keiretsu Forum angels are consistent with this research with the notable exception of deals that are sourced from multiple geographies tend to be on the higher end of the range. Several investments are over \$2 million with a few in the \$8 million to \$10 million range and the highest investment over \$11 million.

Effectiveness of Angel Group Processes

This case study revealed that the methods and practices used by angels and in angel investing are evolving. It was previously thought that angels invest alone or in small groups, but one can now see the emergence of larger groups of angels and networks of groups that are international in scope. The existence of larger groups and networks of groups is now enabling angels to invest outside of their home geographies. Previous research indicates that angels are difficult to find, and angels invest alone or in small groups (Baty & Sommer, 2002). The introduction of a formal screening process and the collaboration among angels in the investment process enable better connections between angels and entrepreneurs.

Two areas in which angel group processes have potential high impact are information flow and transaction costs. The CAPM and many other theories assume the existence of perfect information, highly liquid markets, and low or zero transaction costs (Sharpe, 2007). Such conditions have not existed for angels and their investments (Sohl, 2003a). Transaction costs in angel investing have been much higher than investing in publicly traded securities through a brokerage firm. While it is highly unlikely that the cost of angel investing will ever be close to those levels, angel groups and angel networks do substantially reduce the cost of investing. Established deal screening procedures, regularly scheduled presentations, a commonly understood due diligence process, and standard term negotiation help reduce the cost of investing at early stages.

Information flow in early stage investments has been characterized as imperfect and asymmetrical compared to the public markets (Sohl, 2003a). Formalized angel groups and their processes create better information flow. Rather than an individual investor attempting to make an investment in isolation, many investors can work together to source deals, perform due diligence, and create the best terms for investors and entrepreneurs. The emergence of angel networks and the use of Internet collaboration tools open the possibilities that these parties may not be in the same local area or even the same continent. The impact of better information flow can be found in the results obtained by Keiretsu members. The percentage of bankruptcies and closures in the Keiretsu portfolio is lower than usually found in startups by almost 60%. At the same time, Keiretsu members became fairly effective at not missing opportunities due to overly constrictive investment selection criteria.

Summary

Analysis of the activities of Keiretsu Forum shows that the process and returns are inexorably linked. Given the increased risk associated with angel investing, a corresponding level of return should be present. Constructing a theoretical portfolio from the investments made by Keiretsu Forum members in the period 2000 through 2006 showed that the possibility of higher returns exist. In the period from 2000 through 2006, the theoretical Keiretsu Forum portfolio outperformed the S&P and NASDAQ index funds in 6 of the 7 years. Using the Sharpe Ratio to measure risk premium, the Keiretsu portfolio returns provided a risk premium higher than the index funds as well. These returns and the accompanying risk premium as indicated by the Sharpe Ratio generate a theoretical rather than actual case since no one angel has invested in every Keiretsu investment.

The Keiretsu Forum research confirms several existing ideas about angel investing and points the way to new trends. Keiretsu members, like many other angels, do participate for both economic and non-economic reasons. Besides the expectation of higher than market returns, Keiretsu angels participate in the charitable and social aspects of the group. Where Keiretsu breaks from accepted wisdom centers on geography. Unlike other angels or groups of angels, the network of groups, now international, has the potential to increase the availability of capital, to increase the amount of information in deal sourcing and screening, and to decrease transaction costs.

Perhaps the most significant finding is the validation of the Keiretsu Forum investing process. The number of companies that have failed after being funded by Keiretsu members is more than half what one would expect. At the same time, the number of companies not funded by the members of the group that had achieved successful exits was one-quarter of rate of companies receiving funding. What potential and existing angels and entrepreneurs can learn from these findings is that the information collected and processed through the Keiretsu investment cycle has benefits to all in the process.

Appendix A – The Theory of Angel Investing

Research of angel investing is based on two theoretical areas, entrepreneurship and equity investing (Wiltbank, 2005). Equity investing, in turn, is based on a combination of financial theories. These areas include diversification and portfolio theory as developed by Markowitz, Tobin, Sharpe, and others (Markowitz, 1952; Markowitz, 2005; Sharpe, 1964; Tobin, 1958). Agency theory as defined by Jensen and Meckling (1976) helps guide not only investment decisions but also ownership criteria and incentives for entrepreneurs. Concepts concerning capital structure and liquidity have an impact on the amount of risk investors are willing to accept with the potential of earning higher returns.

The first theories about diversification in financial investments were constructed by Markowitz in the early 1950s (Markowitz, 1952). The saying about not putting all one's eggs in a single basket is the heart of diversification (Markowitz, 1999). Portfolio theory can be defined as a group of models that describe how investors make tradeoffs between risk and reward in constructing investment portfolios (Holton, 2004). The basic idea behind Markowitz's theory is that investors dislike risk and like return. Markowitz's work formed the foundation for investors to understand how risk and reward are related.

The concept that drives the questions raised in the current research is the Capital Asset Pricing Model (CAPM) as defined by William Sharpe (1964). Sharpe built on the work of Markowitz to show how investment risk is comprised of different components influenced by different forces. Since the initial development of the model, the CAPM has become one of the guiding ideas for relating risk and return. The CAPM has two major ideas that should influence investment decisions. The first idea is that return from an asset should be proportional to the risk of holding that asset. The second is that two types of risk exist relative to the asset, market or systematic risk and non-market or specific risk. Market risk is the movement caused in the price of an asset caused by the movement of the market as a whole. Specific risk is the risk that is specific to the asset. In the case of angel investing, this would be the risk associated with the startup venture succeeding or failing. CAPM suggests that the market does not reward investors for assuming specific risk and that specific risk can be eliminated through appropriate levels of diversification. A primary example of the CAPM in action is the various index stock funds that seek to track performance of broad stock market indices at very low overhead cost to the investors.

The application of the CAPM faces several issues when one attempts to apply that theory to early-stage investments. The CAPM and many other theories assume the existence of perfect information, highly liquid markets, and low or zero transaction costs (Sharpe, 2007). In the markets for publicly traded securities, information is readily available and financial reporting is standardized. Information about the markets in which companies operate and the products those companies build and sell is also well known. Trades of publicly held securities can be made almost instantaneously with low brokerage fees. Such

conditions do not exist for angels and their investments (Sohl, 2003a). Privately held securities are illiquid and markets for the securities may simply not exist. The nature of the investment in an early-stage company results in high transaction costs. Those costs come not only from the legal requirements of placing private securities but also the time needed to source investments, perform due diligence, and negotiate valuations and deal structure. The basic assumptions of most financial theories are not valid for angel investing (Sohl, 2003b).

According to the CAPM, angels would not be rational investors. By investing in an early-stage company, angels are betting on the success of that company (Andersson, 2005). Betting on the success of that company is accepting non-systematic risk. The return on the investment in the startup is largely influenced by the performance of the startup. Given the nature of angel investing, one can question if any angel could make enough investments to diversify away specific risk. In essence, angels violate the CAPM by incurring specific risk with the hope of earning above market returns. One purpose of the current study was to examine the returns angels receive from assuming that specific risk.

Agency theory forms another leg of the theoretical framework. Agency issues occur when the interests of the owners and those of the managers diverge (Jensen & Meckling, 1976). Angels frequently rely on relationships with the entrepreneur rather than contracts and legal requirements to monitor the investments. Asymmetric flows of information, potential misrepresentation of markets or capabilities, and potential for unnecessary operational risk are areas where agency issues may arise in young enterprises (Kelly & Hay, 2003). To monitor this risk, angels can assume roles that are more active and involved than investors in public companies. Investments are also structured so that the entrepreneur maintains a large stake in the enterprise (Wong, 2002). The active involvement of the angels and the alignment of incentives may contribute to the ability of angels to make better investments over time.

Research on entrepreneurship is an important part of the theoretical framework. In many cases, angels are entrepreneurs who have been successful and who want to continue to be involved in building new enterprises. They have both the wealth and the experience to help young businesses grow (Wright, Westhead, & Sohl, 1998). Angels need to have an entrepreneurial profile to continue to be successful in their investing. Being proactive, innovative, and willing to accept risk are characteristics of an entrepreneurial orientation that angels need to possess (Lindsay, 2004). Entrepreneurial firms are the focus of the investments of business angels. These firms have a vision and desire for growth as well as desire for innovation, a tolerance for risk-taking, and the ability to change (Sohl, 1999; Van Osnabrugge, 2000). Entrepreneurs consider insufficient capital a barrier to growth. Relatively little traditional venture capital goes to seed stage companies, and banks rarely lend to companies with little or no revenue and assets (Aernoudt & Erikson, 2002). Entrepreneurs will face hurdles, issues, and many other setbacks in the process of reaching acceptance and profitability (Umesh, Jessup, & Huynh, 2007). Like entrepreneurs, angels

seek out arbitrage situations in which imperfect information and market opportunities exist. These situations provide for potentially high returns (Andersson, 2005).

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Contact Information: Geoff Roach, +1-650-357-1804, geoff@geoffroach.com