

## FOR LOVE OR MONEY? A STUDY OF FINANCIAL RETURNS ON INFORMAL INVESTMENTS IN BUSINESSES OWNED BY RELATIVES, FRIENDS, AND STRANGERS

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### ABSTRACT

Agency and altruism theory are combined to develop a framework for explaining expected returns on informal investments in 35 countries that participated in the Global Entrepreneurship Monitor (GEM) in 2004 and 2005.<sup>1</sup> The principal finding is that altruism affects expected returns. Expected returns increase as the relationship distance between the investor and the entrepreneur increases; men expect higher returns than women; entrepreneurs expect higher returns than non-entrepreneurs; expected returns increase as the amount invested increases; old persons expect lower returns than young ones; entrepreneurs expect higher returns on investments in their own businesses than on their investments in others' businesses.

### INTRODUCTION

Informal investment from the so-called 3Fs (family, friends, and foolhardy strangers) is the lifeblood of entrepreneurial ventures. For example, in the USA, informal investors provide more than \$100 billion to millions of new and infant businesses every year; in contrast venture capitalists supply less than \$300 million to a few hundred seed-startup businesses (Bygrave, 2004). But despite the importance of informal investing, only one segment, business angels, has been extensively studied. The bulk of informal investments and at least two-thirds of the total amount invested have hardly been studied at all. This paper focuses on one very important aspect of informal investing: The financial returns expected by the 3Fs.

The systematic study of informal investments in early-stage companies can be traced to the work of William Wetzel at the beginning of the 1980s. At the very first annual Babson Entrepreneurship Research Conference, Wetzel presented what was to become a series of BERC (subsequently BKERC and now BCERC) papers by himself and his coauthors at the University of New Hampshire. That initial paper was on informal risk capital in New England (Wetzel, 1981). A year or so later, Wetzel's study was replicated in California by Tynes and Krasner (1983). Towards the end of the 1980s, Colin Mason and Richard Harrison began to study informal investments in the United Kingdom. Rather as Wetzel and his associates pioneered informal investor research in the USA, so too Harrison and Mason led the way in the United Kingdom. Harrison and Mason first presented a paper dealing with informal investments at the BERC in 1988 (Harrison and Mason, 1988). Again, just like

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<sup>1</sup> We thank all the GEM researchers, past and present, and their sponsors. From 1999 through 2005, GEM comprised the following countries: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Croatia, Denmark, Ecuador, England, Finland, France, Germany, Greece, Hong Kong, Hungary, Iceland, Ireland, Israel, Italy, Jamaica, Japan, Jordan, Korea, Latvia, Mexico, New Zealand, Netherlands, Northern Ireland, Norway, Peru, Poland, Portugal, Scotland, Singapore, Slovenia, South Africa, Spain, Sweden, Switzerland, Taiwan, Thailand, Uganda, United Kingdom, United States, Venezuela, Wales.

Wetzel and his associates, Harrison and Mason, subsequent to their initial paper in 1988, presented a succession of papers at the annual BERF.

Based on the ground-breaking studies of Wetzel and his associates in the USA and Harrison and Mason in the UK, van Osnabrugge (1999) wrote that “the BA [business angel] market in UK and the USA is the largest single source of risk financing for entrepreneurial firms, exceeding the institutional VC industry (Mason and Harrison, 1996). In fact, estimates in the UK and the US suggest that BAs fund an annual amount of two to five times more money to entrepreneurial firms than the VC industry (Wetzel, 1987; Freear et al., 1996; Mason and Harrison, 1993)... it is ‘guesstimated’ that BAs fund between 30-40 times the number of entrepreneurial firms financed by the formal VC industry (Wetzel and Freear, 1994).”

Most of the research on informal investments has focused on business angels who invest comparatively large sums of money in entrepreneurial ventures with the potential to become substantial companies. It is probable that studies of investments by business angels miss not only—as expected—micro-companies that are destined to stay tiny, but also many—perhaps most—companies that grow to become superstars. For instance, according to an analysis of the Inc500 “America’s fastest growing private companies” in 2000, 16 percent started with less than \$1,000, 42 percent with \$10,000 or less, and 58 percent with \$20,000 or less (Inc., 2000). We believe it is very unlikely that companies starting with \$20,000 or less received seed money from business angels. Granted, when both seed and post-startup rounds of investment are combined, 12 percent of the 500 companies received financing from business angels. But looked at another way, 88 percent of “America’s [500] fastest growing private companies” never received financing from business angels. In contrast, 33 percent of the same 500 companies raised startup capital “by tapping assets of family and friends.”

Previous studies of the returns on informal investment dealt exclusively with business angels. The research described in this paper encompasses all men and women who personally invested in a business startup that was not their own, excluding stocks and mutual funds. Informal investments in our study range from tiny amounts put into micro-ventures to huge sums invested in high-potential ventures. Hence, we believe that our study gives a more comprehensive picture of the returns expected by informal investors because it comprises all sizes of informal investments in all types of companies, of which business angel investments are just one—albeit very important—subset.

#### Contributions

Informal investment is vital for entrepreneurship. However, while we know a lot about formal venture capital returns, we know almost nothing about informal investment returns. It appears that the amount of information on venture capital and informal investment is inversely proportional to their importance in funding newborn businesses. We believe that this study is the first time that the returns for informal investing other than business angels have been systematically examined. Also, this paper develops a theoretical basis in which agency and altruism theory are combined to explain the empirical findings.

## LITERATURE REVIEW

There is an abundance of cross-sectional and longitudinal information on financial returns on formal venture capital at all levels—individual deals, portfolios, stages, and aggregates (e.g., Venture Economics publications). But there is only scanty information on the returns on informal investment. We agree with Wiltbank and Sarasvathy’s (2002) statement that “reliable data on informal investors such as angels is very hard to come by.” Furthermore, we believe that reliable data on informal investment returns do not exist, except for business angels, and what does exist for business angels is inadequate. Our knowledge about returns on informal investment is mainly folklore or is based on relatively small self-reported samples.

Business angels are an important subset of informal investors. According to The Center for Venture Research at the University of New Hampshire (UNH), a conservative estimate suggests that between 300,000 and 350,000 angels invest approximately \$30 billion every year in close to fifty thousand ventures in the USA (Sohl, 2003). However, as Sohl (2003) noted “research on actual angel investment origination and conclusion is acutely missing from the current knowledge base.” It means that there is almost no systematic information on actual returns on angel investments at the deal level, which in turn means that there are no reliable data on returns at the portfolio level or the national aggregate level. Sohl (2003) states that angel returns “hover in the 20% and 40% range.” The UNH

center reports that angel investors expect an average annual return of 26% at the time they invest, and they believe that about one-third of their investments are likely to result in a substantial capital loss.

Mason and Harrison (1999) analyzed the returns on informal venture capital investment using data on 128 exited investments from a survey of 127 business angels in the UK. They found that the distribution of returns was highly skewed, with 34% of exits at a total loss, 13% at a partial loss or break-even, and 23% showing an IRR of at least 50%.

According to Wainwright (2005), business angels expect an IRR of 15% to 25% with a payback time between 5 and 7 years. An MIT study of only 22 business angels found that they expected returns between 3:1 and 10:1 on their investments, and that actual returns ranged from losses on 32% of their investments to higher than 10:1 on 23% (Venture Support Systems Project 2002). The same MIT study found that business angels were evenly split between IPOs and acquisitions as their preferred exit; none preferred a buyback. In practice, 27% of business angel investments were exited with an IPO, 35% with an acquisition, 5% with a buyback, and 32% were losses.

The most extensive study of returns on informal investments was made by Wiltbank (2005). He studied the investment activities of 121 angel investors self-reporting on 1,038 investments totaling \$218 million invested. Approximately 75% of the angels were members of 12 angel investor groups in nine US states and 25% were reached through a survey of 150 members of an online investment network, NVST. In all, 600 angels were contacted and 121 usable replies were received. Wiltbank examined the returns from the 414 (of the 1,038 ventures) that had been exited; he found that the angels lost money on 61.5% of their investments; earned an IRR between 0% and 24% on 8%; 25%-49% on 7%; 50%-99% on 3.5%; and 100% or more on 20%.

In general, business angels should be satisfied with a lower return than venture capitalists because, unlike venture capitalists, they have only minimum operating costs and they do not have to pay carried interest on any capital gains. Venture capitalists charge as much as 3% per year on the money that they manage, and on top of that they deduct 20%—sometimes more—from the capital gains that they pass on to their investors. Hence, to produce a return of 25% for their investors, venture capitalists need to get a return of 35% or more from their investment portfolio. It is, therefore, surprising that self-reported returns of business angels are somewhat higher than the returns of professional venture capitalists (Wiltbank, 2005: Figure 2). Could it be that self-selection has biased the findings? Perhaps most of the business angels reporting their returns had something to brag about; whereas most of those not replying were too embarrassed by their mediocre results to reveal them; after all, Wiltbank's response rate was only 23%, of which 11% were incomplete. Another factor that might have biased Wiltbank's returns upward is that his business angel returns were calculated from only deals that had been exited (39.9% of the total), whereas venture capitalists report the overall return on all their investments—both exited and un-exited. Just like venture capitalists, business angels have in their un-exited portfolios “living dead” and “walking wounded,” which they are unwilling to mark down and reluctant to write off. If Wiltbank had included the investments that had not yet been exited (61.1%), it is likely business angel returns would have been lower and more in line with venture capital returns.

## THEORY DEVELOPMENT

Ever since Jensen and Meckling (1976) broke open the economists' black box called the firm, agency theory has been used to explain how the conflicting interests of humans involved within a firm seldom lead to the value maximization predicted by black box econometrics; instead they lead to arrangements that keep in check potential conflict of interest among those involved with the firm. Agency theory argues that because humans are self-interested, they will have conflicts of interest over some issues whenever they cooperate together; incentives can be put in place to reduce or control conflicts of interest and thereby minimize losses and share the gains among the self-interested parties.

Self-interest, however, does not exclude altruism, which is concern for the well-being of others; nor does altruism make a person a perfect agent who always does the bidding of the principal (Jensen, 1994). We combine agency and altruism theory to explain the behavior of informal

investors—encompassing relatives, friends, neighbors, work colleagues, and strangers (business angels)—who put money into entrepreneurial ventures. The overarching proposition is that as the relationship between an investor and an entrepreneur becomes more distant, the influence of altruism decreases and agency concerns increase to the point where they dominate, as in the case of formal investments by professional venture capitalists.

Agency theory is especially useful in explaining why the limited partnership is the most effective organizational form for managing venture capital: It is because the interests of investors in venture capital funds are aligned with the interests of the venture capitalists who manage those funds; whose interests in turn are aligned with the interests of the entrepreneurs that run the companies in which the venture capitalists invest (e.g., Gompers, 1995; Norton, 1995; Gompers and Lerner, 1996). Van Osnagrugge (2000) studied how venture capitalists and business angels use different approaches to limit agency risks in their investments, which is the potential risk of an entrepreneur's misuse of an investor's money. He found that both types of investors reduced agency risks, but whereas venture capitalists relied on formal agreements set up before an investment was made (principal-agent approach), business angels tended to place more emphasis on monitoring after an investment was made (the incomplete contracts approach).

Venture capital firms spell out in a legal document running to several hundred pages the terms and conditions governing their investment in a portfolio company; in contrast, rather than relying on elaborate investment agreements many business angels watch over their investments by working closely with their entrepreneurs. Granted some business angels, especially those who belong to formal business angel networks, are behaving more and more like venture capitalists, whose sole objective is to maximize financial returns; however, most business angels do not belong to formal networks and they have reasons for investing in entrepreneurial businesses other than simply maximizing their financial returns. For instance, many business angels invest in entrepreneurs and their new ventures not only for a financial return but also for an altruistic return such as helping an entrepreneur to develop a fledgling venture idea into a viable business (e.g., Bygrave and Zacharakis, 2007).

Altruism associated with informal investing in entrepreneurial companies has barely been considered in the scholarly literature. Bubna (2006) recently developed hypotheses about how relational distance (hence, altruism) affects various contractual arrangements such as guaranteed bank loans and tied assistance and gifts in financing new ventures. He derived econometric arguments about how kinship altruism influences the likelihood that entrepreneurs can get access to bank loans; unfortunately, there are almost no empirical studies of this topic, and the one that Bubna cites, Avery, et al. (1998), provides only skimpy evidence to support Bubna's hypotheses. Nonetheless, Bubna's reasoning is compelling and our paper builds on some of his ideas.

The term altruism applied to informal investing is an investor's sacrifice of resources for the benefit of an entrepreneur. In the context of this paper the resources are money invested in an entrepreneur's business, but they often comprise a person's time and energy. What causes a person to be altruistic to another? Reasons cited by Bubna include familiarity, personality traits, appearance, background, lifestyle, similarity of opinions, and meeting of minds. Influences such as those determine whether two people like each other and engage in altruistic behavior. Hence, if a person decides to invest in an entrepreneur whom he likes, the decision may not be determined solely by rational self-interest, instead altruism may moderate the expected financial return.

A search of the finance and economic literature for a theory that explains the return on informal investment when it is tempered by altruism comes up empty handed. There is however an extensive literature in biology that investigates the relationship between degrees of genetic relatedness and social behavior of animals that can be traced back to Hamilton's (1964) paper on the evolution of altruistic behavior. Some sociobiologically oriented researchers built on Hamilton's work and implied that an individual's altruistic behavior towards his kin is directly proportional to the coefficient of relationship (e.g., Trivers and Hare, 1976). Kurland (1977) proposed that altruistic acts increase and selfish acts decrease as the degree of relatedness between individuals increases. Dawkins (1976) explained the direct connection between altruism and relatedness as follows: An individual should care for his brother as much as he cares for his own child and if his brother is his identical twin he should care twice as much for him as his own child. Weigel (1981) built on Altmann's (1979) suggestion that altruistic behavior is a curvilinear relationship and developed a mathematical model with a diminishing returns investment function to simulate how an altruist distributed investment among a group of kin.

He found that altruistic investment increased with genetic relatedness. The distribution of investment was a function of costs, benefits, and energy associated with a specific altruistic act. In early rounds of investment, the altruist favored close kin, but as the total investment increased, altruism was more evenly distributed among kin. This leads us to the following propositions:

P1: The influence of altruism on an informal investment decreases with the distance of the relationship between an investor and an entrepreneur.

P2: In general, an investment decision that is based partly on altruism rather than purely on rational self-interest produces a lower return.

We deduce the following hypothesis from P1 and P2:

H1: The expected return on investment increases as the relational distance between an informal investor and an entrepreneur increases; which means that the lowest return will be expected by close relatives and the highest return by strangers such as business angels.

Factors that might have a bearing on an informal investor's expected return include age, experience, financial sophistication, amount invested, and gender.

Bygrave and Reynolds (2004) found that entrepreneurs are four to five times as likely as non-entrepreneurs to be informal investors. Entrepreneurs themselves have experience in raising informal investment for their own companies so it seems reasonable to expect that they are more sophisticated than non-entrepreneurs when evaluating potential investments and are more likely to pick investments that will be successful. This leads to the following hypothesis:

H2: Entrepreneurs expect higher returns on their informal investments than non-entrepreneurs.

It seems reasonable to expect that larger investments will be scrutinized more carefully and small ones; also decisions to invest larger amounts will be less swayed by altruism and influenced more by rational expectations. Hence we deduce the following:

H3: The larger the informal investment, the higher the expected return.

Proportionately fewer women than men are entrepreneurs who are also informal investors. Furthermore, women invest smaller amounts than men (Bygrave and Reynolds, 2004). So combining H2 and H3 and separating the expectations by gender produces the following:

H4: Male informal investors expect higher returns than females.

The age of informal investors may influence their expected returns. Older persons invest larger amounts than young ones (Bygrave and Reynolds, 2004); which implies that they would expect higher returns if H3 is correct. However, older persons have more income and higher net worth so they can afford to be more altruistic; which implies that they would expect lower returns. On the other hand, some older informal investors, especially retirees and those approaching retirement, may be cautious and therefore more rational in their investment decisions; which implies that they expect higher returns. Young neophyte informal investors may be overly optimistic about their expected returns than veterans; which implies that young informal investors expect higher returns. Therefore we propose a null hypothesis:

H5: The age of informal investors does not affect the expected returns.

Entrepreneurs themselves invest in their own businesses. The GEM study found that approximately two-thirds of the initial capital for starting a venture comes from the founders themselves (Bygrave, 2004). When entrepreneurs invest in their own businesses it is purely out of self-interest, but when they invest in other entrepreneurs' businesses altruism is often involved; hence the following hypothesis:

H6: When entrepreneurs invest in their own businesses they expect higher returns than when they invest in other entrepreneurs' businesses.

We used data from the Global Entrepreneurship Monitor (GEM) to test our hypotheses.

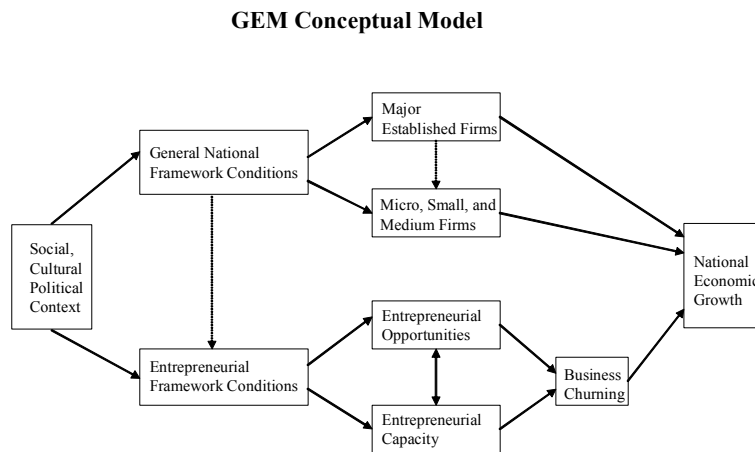
### GEM CONCEPTUAL MODEL<sup>2</sup>

The central argument of the GEM model is that national economic growth is a function of two parallel sets of interrelated activities: those associated with established firms and those related directly to the entrepreneurial process. A simplified version of the model is shown in Figure 1. Activity among established firms only explains part of the story behind variations in economic growth. The entrepreneurial process may also account for a significant proportion of the differences in economic prosperity among countries. For example, it is estimated that nearly a third of all real GDP growth in the USA between 1995 and 2000 was driven by the technology sector—which is laden with entrepreneurial companies—even though that sector accounted for only 8 percent of the US economy (Eisenach, 2001.) As another example, a study by the DRI-WEFA (formerly Wharton Econometric Forecasting Associates), which was supported by the National Venture Capital Association, found that venture capital invested during the period 1970 - 2000 created 7.6 million US jobs and more than \$1.3 trillion in revenue as of the end of 2000. Put another way, venture-capital-backed companies represented 5.9 percent of the total jobs in the USA and 13.1 percent of the GDP (NVCA, 2001).

Important as venture capital is in supporting high-potential young companies, especially the technology-based ones, it is not nearly as important as informal investment in the overall scheme of funding entrepreneurs and their businesses. In the USA in 2002, we found that \$21.2 billion of classic venture capital<sup>3</sup> was invested in 2,514 companies compared with \$102.8 billion of informal investment in 3.5 million companies. Put another way: Less than one in a thousand companies received classic venture capital in the USA in 2002. What’s more we estimate that only 1 in 10,000 seed-stage companies received venture capital.

Informal investment is crucial to the global economy. It is fair to claim that if there were no informal investment (including investment by entrepreneurs themselves in their own companies), there would be no new companies, because essentially every company begins life with informal investment whereas almost no new company has classic venture capital on hand when it is newly born.

Figure 1



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<sup>2</sup> Parts of this section are excerpted from the Global Entrepreneurship Monitor: 2000 Executive Report, Reynolds, P. D., Hay, M., Bygrave, W. D., Camp, S. M., and Autio, E.

<sup>3</sup> Classic venture capital comprises investments in seed, early, startup, and expansion stage companies.

Financial support

Entrepreneurs are the engines that drive new companies, and financing is the fuel that propels them. Hence, financial support, especially equity finance for starting a company, is an important entrepreneurial framework condition (Figure 2). In the model, entrepreneurs are motivated by what they perceive to be opportunities to start a new business, and believe that they have the necessary knowledge, skills, and experience to develop those businesses. The principal source of external financial support to launch many of those new businesses is informal investors.

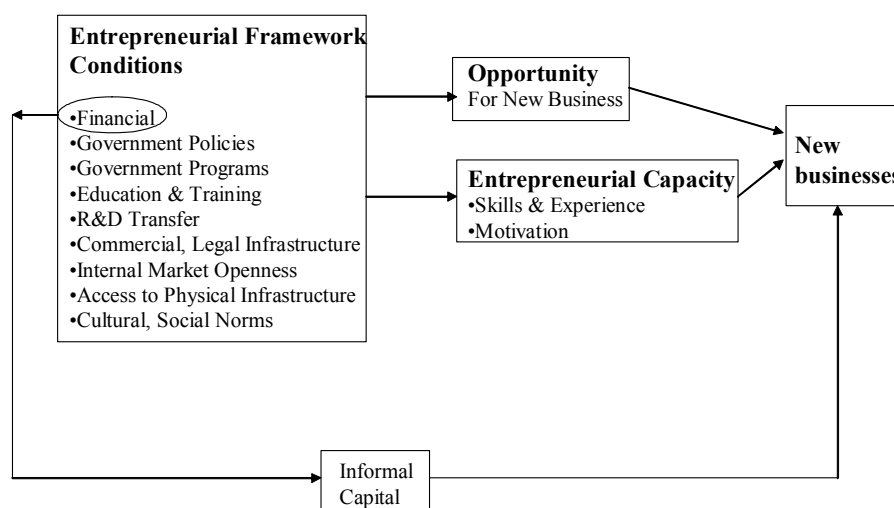
The source of financing depends on where a startup sits on the entrepreneurship spectrum. At one end of that spectrum is a lone, self-employed person in an impoverished region for whom eking out a subsistence living from a micro-business is better than no work at all. At the other end is a team of high-tech superstars in a technology metropolis with a high-potential opportunity that they believe will change the way in which we work, live, and play. In the middle are startup ventures founded on opportunities that are more limited than high-potential ones but have the prospect of developing into viable companies that will eventually provide a comfortable living for the entrepreneur and, in some cases, full-time employees.

At the bottom end of the spectrum, micro-entrepreneurs pushed into self-employment to survive have no choice other than self-financing. In the middle, entrepreneurs pulled into a startup by an opportunity with ordinary potential usually get financing from informal investors—the so-called 3Fs. At the top end, superstars with extraordinary opportunities launch their businesses with financing from professional venture capital, strategic partners, and the 3Fs.

The GEM study includes key elements across the spectrum of startup financing. We estimate the extent of informal investments from the household surveys. And we gather data from industry sources on investments by professional venture capital firms.

Figure 2

**GEM Model for Informal Investment**



In this paper we examine the financial returns expected by informal investors and entrepreneurs in 35 GEM nations in 2004 and 2005; and we develop a theoretical framework for examining those returns.

## METHOD

Professional survey organizations administered an adult population questionnaire to households in 35 nations. Those nations comprised approximately 90% of the world's GDP and about two-third of its population. The number of adults surveyed in a nation ranged from 2,000 to 24,000. The sample was properly weighted to represent the adult populations in each of the countries. The questionnaire, which deals with various aspects of entrepreneurial activity in nascent and baby businesses, can be obtained from the [www.gemconsortium.org](http://www.gemconsortium.org) Web site. GEM's research methods are described in Reynolds, et al. 2005.

We were interested in the responses of individuals who reported that they had, in the past three years, personally provided funds for a new business started by someone else (excluding any purchases of public stocks or mutual funds). They were asked how much, in total, they had personally provided to those business startups in the past three years. They were also asked what their relationship was to the person who received their last investment; how long they thought it would be before they received back the full amount of their contribution to that new firm; and what payback they expected to get on the money they put into that start-up.

Individuals who reported that they were entrepreneurs were asked how much money they needed to start their own ventures; how much money they themselves were providing; and what payback they expected.

We combined the GEM data sets for 2004 and 2005 making a total of 5,551 (3,501 male, 2,050 female) valid replies from informal investors in 35 nations.

## Results

The relationship between the informal investor and the entrepreneur is shown in Table 1. It lists the percent of the number of informal investments in each category; for example, 49.4% of all investments were in businesses run by entrepreneurs who were close relatives (spouse, child, grandchild, brother, sister, parent, grandparent) and 9.4% were other relatives. The average amount invested in each category is listed as are the median expected payback time and the median times return. It is very interesting that in all relationship categories except strangers only half of the informal investors expected to get a positive return; the other half expected just to breakeven or get back less than they invested in two years or less. Half of the investments in strangers were expected to produce a return on 50% or more in two to five years.

Table 1

Relationship of Informal Investor to Entrepreneur

Relationship: Investor-Entrepreneur	% Total Number	Mean Amount Invested US\$	Median Payback time	Median X return
Close family	49.4%	23,190	2 Years	1 x
Other relative	9.4%	12,345	2 Years	1 x
Work colleague	7.9%	39,032	2 Years	1 x
Friend, Neighbor	26.4%	15,548	2 Years	1 x
Stranger	6.9%	67,672	2 - 5 Years	1.5 x
		24,202	2 Years	1 x

The expected payback time and expected times return were converted into expected IRRs for both informal investments in other persons' businesses and for entrepreneurs' investments in their own businesses. The results are summarized in Figure 3. It shows that 51% of informal investors expected a negative or zero IRR and about 23% expected an IRR of 100% or more. Entrepreneurs' expected returns on money that they themselves invested in their own businesses were almost the mirror image of returns expected by informal investors on money they put into others' businesses, with 53% of entrepreneurs expecting an IRR of 100% or more and only 13% expecting an IRR of zero or less.

Figure 3

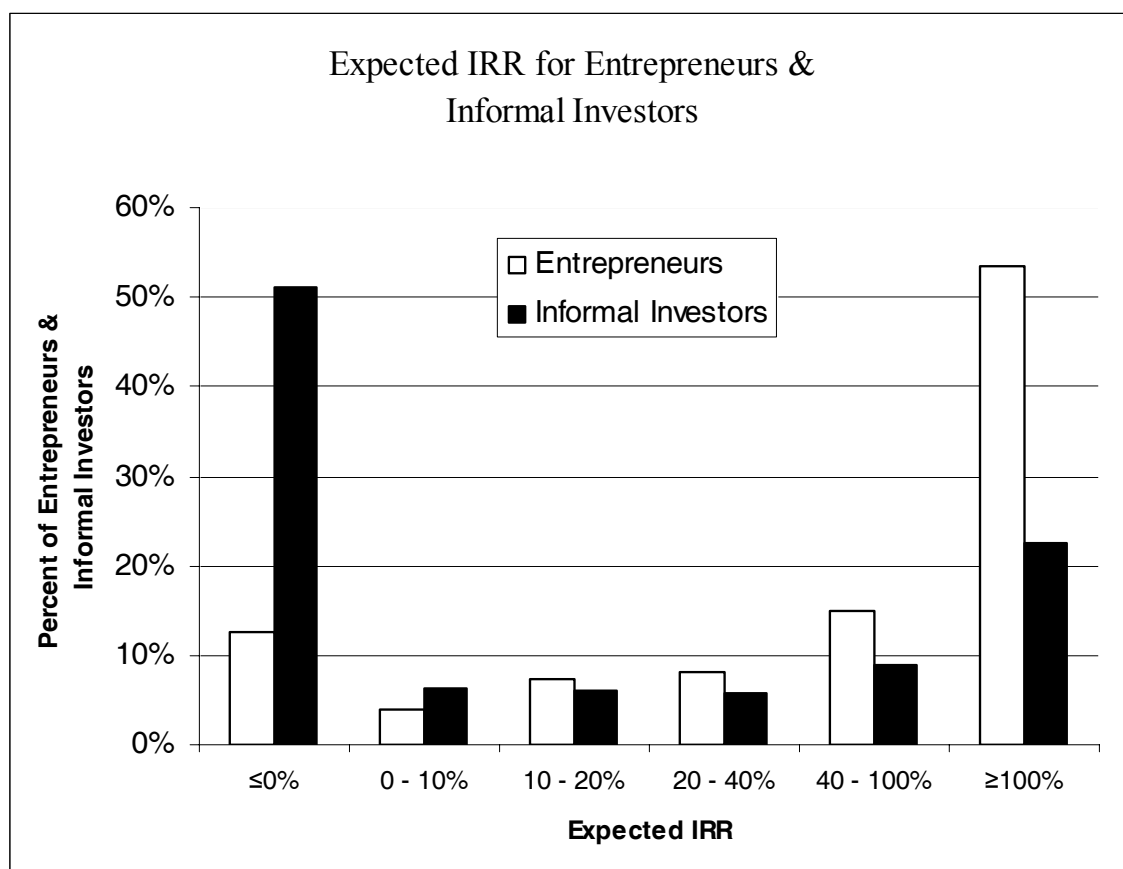


Table 2A

		Expected IRR								
		Category of Informal Investors								
Percentile of Informal Investors		All	Male	Female	Entrepreneurs	Non-Entrepreneurs	OECD	Non-OECD	Amount: Top 10%	Amount: Bottom 20%
25 percentile		-2.9%	-0.8%	-28.0%	0.0%	-21.4%	0.0%	-37.3%	0.0%	-100.0%
50 percentile		0.0%	7.2%	0.0%	12.8%	0.0%	0.0%	8.4%	8.4%	0.0%
75 Percentile		42.3%	53.5%	38.6%	89.2%	35.8%	38.9%	102.7%	38.5%	75.0%
Difference between frequency distributions	Chi-square	45			84		118		112	
	df	5			5		5		5	
	p<	0.0001			0.0001		0.0001		0.0001	

Table 2B

		Expected IRR			
		Recipient of Informal Investment			
Percentile of Informal Investors		Close family	Stranger	Self	Another
25 percentile		-7.2%	0.0%	14.7%	0.0%
50 percentile		0.0%	14.0%	87.7%	12.8%
75 Percentile		40.8%	69.5%	386.3%	89.2%
Difference between frequency distributions	Chi-square	63		733	
	df	5		5	
	p<	0.0001		0.0001	

In Tables 2A and 2B, the frequency distributions of the IRRs for various categories of informal investments are shown. It reveals the following:

The median IRR expected by males was 7.2% compared with 0% by females; the difference between the frequency distributions is significant at the .0001 level, which is consistent with H4.

The median IRR for informal investors who were entrepreneurs was 12.8% compared with 0% for non-entrepreneurs; the difference between the frequency distributions is significant at the .0001 level, which is consistent with H2.

The median IRR on big informal investments (amount in the top 10%) was 8% compared with 0% on small ones (amount in the bottom 10%); the difference between the frequency distributions is significant at the .0001 level, which is consistent with H3.

The median IRR on informal investments in close family member was 0% compared with 14% for investments in strangers; the difference between the frequency distributions is significant at the .0001 level, which is consistent with H1.

The median IRR that entrepreneurs expected on their own money invested in their own business was 87.7% compared with 12.8% for money they invested in others' businesses; the difference between the frequency distributions is significant at the .0001 level, which is consistent with H6.

Of course, our categories are not mutually exclusive; for instance, the same informal investor could be a woman, an entrepreneur, invest an amount that puts it in the bottom 10% of all investments, invest the money in a close relative's business, live in a non-OECD country, be 25 years old, and have a household income of \$5,000 per year. To separate out those different factors we ran on OLS regression, Table 3, with times return as the dependent variable. We controlled for whether or not a country was a member of the OECD and for household income.

The relationship between an informal investor and an entrepreneur was scaled as follows: Close relative = 1, Other relative = 2, Friend or neighbor = 3, Work colleague = 4, and Stranger = 5. Dummy variables were used for gender with male = 1; for country classification with OECD = 1; and for non-entrepreneur/entrepreneur with entrepreneur = 1. All currencies were converted to US dollars.

The regression confirmed H1, H2, H3, and H4. It rejected the null hypotheses, H5, because times return was negatively correlated with age; which means that older persons expected lower returns. The model is significant at the .0001 level although the R-square is very small.

Household income was a control variable. However, it is interesting that the expected return increased with household income. It deserves further investigation because we could make a case that investors with higher incomes could afford to be more altruistic and therefore expect lower returns. On the other hand, we know that households with higher incomes also invest larger amounts (Bygrave and Reynolds, 2004), which implies higher expected returns.

The expected returns in OECD member countries were lower than in non-OECD countries. This merits further investigation. At this time we will not speculate on possible causes.

Table 3

Regression (OLS)

Dependent variable: Times Return	Coefficient	t	Significance
Constant	2.993	18.689	0.000
Non-OECD /OECD Country	-0.215	-2.725	0.006
Household Income	0.268	6.174	0.000
Gender: Female/Male	0.205	2.735	0.005
Age	-0.02	2.808	0.000
Non-Entrepreneur/Entrepreneur	0.584	7.937	0.000
Amount of Investment	8.01E-07	2.464	0.014
Relationship to Investee	0.112	4.644	0.000
R Square			0.069
Adjusted R Square			0.068
F			38.39
n			3613
p			0.000

## DISCUSSION

This is the first extensive study of the returns expected by informal investors so there are no other studies with which direct comparisons can be made. With the exception of GEM-related work, previous studies of informal investors have been almost exclusively on business angels; what little data exist for return on investment are for actual not expected returns. That having been said, we will compare some of our findings with those on business angels, because our stranger category contains business angels. For instance, the average investment of \$67,672 in strangers' businesses in our data is comparable with Sohl's (2003) estimate that a US business angel invests an average of \$92,000 per venture; it is lower than Wiltbank's mean of \$211,000 per venture but comparable to his median of \$60,000. The median payback period for investments in strangers is 2-5 years, which is comparable to Mason and Harrison's (1999) average time of four years for an exit.

Returns on investments in strangers were expected to be zero or negative in 25% of our cases compared with 61.5% of Wiltbank's (2005) and 47% of Mason and Harrison's (1999). We believe that most of the difference is because ours are expected returns and theirs are actual returns. We are struck by the similarity of our curve showing the frequency distribution of IRRs for our informal investments (Figure 3) and Wiltbank's curve for business angel investments (Wiltbank, Figure 2). Both are U-shaped: At the bottom end 51% of ours are breakeven or losses vs. Wiltbank's 61.5% and at the top end 23% of ours are 100% or more vs. Wiltbank's 20%.

We think the expected returns on informal investments show that the decision to invest is partly motivated by altruism. The ratio of altruism to the self-interest decreases as the relationship between an investor and an entrepreneur increases. We acknowledge that we are using the term investment in a broad sense to include not only an investment but also a loan and even a gift—the ultimate altruistic “investment.” But we think our classification is justified because putting money into a fledgling business is very risky and the outcome is the same if the business fails: Lenders and investors both lose money.

Our analysis indicates that the closer the relationship between an entrepreneur and an investor, the lower the expected return. Many informal investors were realistic when they put money into relatives' and friends' businesses because 51% expected to lose money or at best breakeven. It confirms a common piece of advice given to entrepreneurs who are seeking informal investments: Make sure that investors, family and friends in particular, can afford to lose all their investment without having to change their lifestyle.

We believe that our findings have important implications for public policy. As we already wrote, informal investment is the lifeblood of entrepreneurship. It is crucial to the economy. Most informal investors expect to lose money or at best get a mediocre return. There is a lot of altruism in informal investing. We think that public policy, especially income tax initiatives, could be tailored to encourage more informal investing. In the USA, we allow tax deductions for gifts to non-profit organizations; why not consider some kind of deduction for investments in new businesses at the time an investment is made. After all, when parents invest in a child's new venture they are helping to create at least one job, and the money that they invest will show up in the GDP almost immediately when it is spent to buy goods or services or pay wages.

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