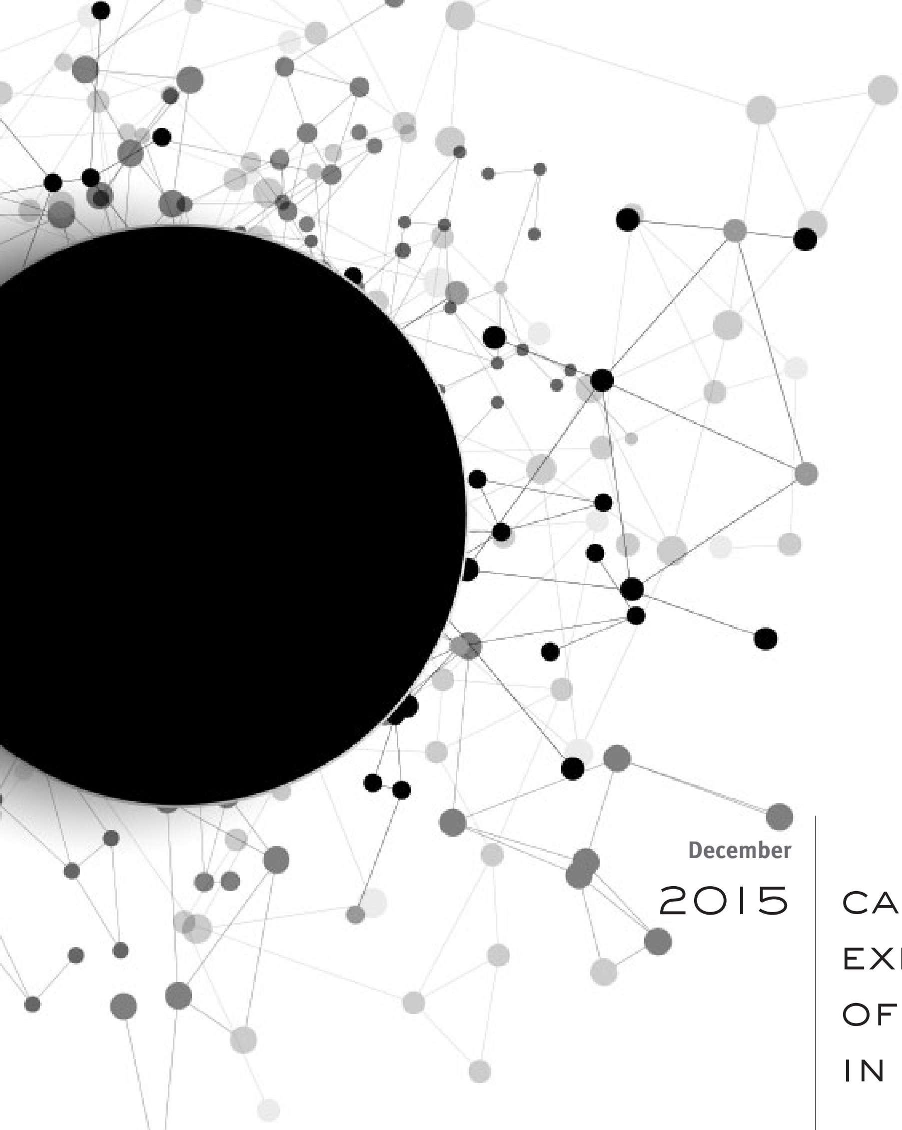


December

2015

# CAPTURING THE EXPECTED RETURNS OF ANGEL INVESTORS IN GROUPS

## LESS IN MORE — DIVERSIFY


**Matthew C. Le Merle**

Fifth Era LLC

San Francisco, California

mlemerle@fifthera.com

**Louis A. Le Merle**

University of California at Berkeley

Berkeley, California

llemerle@fifthera.com


FIFTH ERA

*Advise, Develop, Invest*

# ACKNOWLEDGEMENTS

Matthew C. Le Merle, and Louis A. Le Merle authored this report and the views expressed are theirs alone.

They would like to recognise the significant assistance of Keiretsu Forum (the world's largest angel group with more than 2,000 members across 40 chapters on 3 continents) and the significant contribution of the more than 250 angel investors that participated in the survey at Keiretsu Forum chapter meetings in the US and Canada.

In addition, they would like to thank Nathan MacDonald (CEO Keiretsu Capital and Chairman Keiretsu Forum NorthWest) and Randy Williams (Founder and CEO of Keiretsu Forum) who encouraged their angels to participate in the survey. Tom Shalvarjian, CEO at 3x3 created the design and produced the report.

The project team also drew upon academic and public research and publicly available information which is detailed in the references section of this report.

**Matthew C. Le Merle**

Managing Partner, Fifth Era, San Francisco, USA

**Louis A. Le Merle**

Associate, Fifth Era, Berkeley, USA

December 2015

# TABLE OF CONTENTS

# EXECUTIVE SUMMARY

ANGEL INVESTORS BACK MORE THAN 73,000 BUSINESSES EACH YEAR IN THE US AND MANY HUNDREDS OF THOUSANDS MORE AROUND THE WORLD. THESE BUSINESSES ARE MOST FREQUENTLY TECHNOLOGY ENABLED BUSINESSES AND ARE SEEN TO BE IMPORTANT DRIVERS OF INNOVATION, GDP AND JOB GROWTH BY MOST COUNTRIES WORLDWIDE. WHILE THERE IS LITTLE ACADEMIC RESEARCH INTO ANGEL INVESTORS, THOSE RESEARCHERS IN THE SPACE HAVE FOUND:

+ The return to angels investing in groups is viewed as attractive and perhaps as high as net annual IRR's in the mid 20's
+ Those returns arrive over a 3 to 5 year timeframe with a tail of investments that may take longer to realize
+ The failure rate experienced by angels as measured by exits where no capital is returned, is lower than that of venture capital investors - angels work hard to avoid capital losses
+ The successful exits tend to be less skewed than the venture capital experience, but none the less, a majority of the total return is still returned by a small number of highly successful outcomes
+ While this makes the average angel return attractive it also implies that a significant number of angel investors may still have portfolios that do not perform and in fact many angels do not see a return of capital
+ The most practical way for an angel to raise the likelihood of capturing the angel return, is to ensure they are highly diversified - in terms of the number of companies they hold in their portfolio, and if they have a specific industry or sector focus, then at that specific level too
+ Angels understand both the attractive returns possible, and the need for diversification
+ However, angels are limited in their ability to achieve diversification. In practice most invest in far fewer early stage technology companies than preferable

This provides clarity to perhaps the most important challenge facing angels investing in groups. Given their capital constraints, their need to diversify and their desire to benefit from the angel return, they need to make many more smaller investments in angel backed technology companies.

**LESS IN MORE DEALS – DIVERSIFY**

Today no broadly available solution exists to this challenge. The angel investment sector does not have index funds that would allow a single investment to be spread across all investments in the sector.

Instead a possible solution would need to:

+ Enable investment into technology based start-ups and early stage companies that are backed by angels investing in groups
+ Allow investment alongside leading angels who are investing in groups that share the best practices that drive the angel return:
    - Consistent deep due diligence processes where the work is conducted by the angels themselves
    - Relevant and deep Industry expertise among those angels who are directly backing the company coming out of due diligence
    - Active participation in an ongoing fashion in each company by those angels who have invested in the company, and who have the expertise to drive successful outcomes
+ Provide access to a large portfolio of such deals pari passu with the angels themselves - in the same round, with the same terms and conditions of the angels
+ Ideally, do so as the last money into that round - given that last money in benefits from a derisked round - the round will not run the risk of raising less capital than the company had said it would require
+ Do all of this in a way that does not upset the core process of the angels investing in groups - if the solution creates other behaviors, leads to adverse selection, or suffers from vested interests, then it will not accomplish the angel return but some other return

The authors have reviewed existing solutions and are unaware of any that meet all of these characteristics and are today widely available. With Keiretsu Forum, they are working to develop such a solution at Keiretsu Capital (www.keiretsucapital.com).

# BACKGROUND

Technology companies are driving innovation in most economies of the world, and others have written at length about the impact this has on new business formation, GDP growth and job creation (OECD 2011, 2012 and 2013). Suffice to say that the leaders of most countries today believe that technology companies are critical to their local economies, and that small and growing businesses are the most important drivers of success in a modern economy.

Investors in technology companies at inception include the entrepreneurs themselves, their friends and families, and angel investors or business angels who are willing to invest their own money in new companies. Later, early and late stage venture capital (VC) funds may become investors although most businesses never receive VC backing.

In the US 316,600 angels backed 73,400 businesses in 2014 with $24.1 billion of funding (Sohl, 2014). In the same year, VC's only backed 4,350 companies - though including their pre-ipo expansion capital rounds, the capital they invested was $50.8 billion. By the relative numbers it can be seen that angels are much more important for most companies in their start-up phase of life with VC's for the most part only investing in angel backed companies once they have significant traction to justify larger investment rounds. Sohl goes on to demonstrate that this is particularly important in the broadly defined technology sector. Of the 73,400 businesses backed by angels in 2014, 27% were software, 16% were healthcare services, medical devices and equipment and 10% IT services. In addition, other sectors backed by angels such as retail (9%) and financial services (8%) also include many technology enabled businesses (Sohl, 2014).

Given this critical role being played by angels it is surprising that there is little research into the investing activities and behaviors of angels and the risks they take and the returns they can expect. In this report we draw upon the academic research that has been conducted and add to it with our own survey of over 250 angel investors.

Our primary research focus was to gauge whether these angel investors had realistic expectations regarding the likely return for angels investing in groups, and whether they are making sufficient investments to accomplish a diversified portfolio (at the aggregate level).

**EQUITY CAPITAL FOR ENTREPRENEURS**

By funding stage


[1] Initial funding is typically provied by entrepreneurs and "friends and family".

[2] Angel investors or angel groups typically provide the bulk of the "seed" or "early stage" capital in the next round.

[3] VCs generally invest in later rounds after one or more rounds of angel investment.

*Source:* Jeffrey E. Sohl, "The U.S. Angel and Venture Capital Market: Recent Trends and Developments"

# ANGEL GROUP RETURNS ATTRACTIVE

Most academic research that has been conducted into the activities of angels investing in angel groups and the returns they can expect, is consistent in reporting that the angel group returns are attractive and rely upon specific behaviors of the angels. A short summary follows:

**Expected Angel Returns.** The studies of angel returns are consistent in reporting attractive returns:

In their ground-breaking 2002 research Mason and Harrison in the UK show that angels have a significantly lower number of exits that return no capital (39.8% as compared to 64.2% for VC's), have a larger number that return modest IRR's and roughly comparable proportions of exits showing IRR's exceeding 50% (Angels 23.5% of deals, VC's 21.5% of deals). Angels achieve their returns with relatively low failure rates and lots of modest returns adding to the return of the relatively infrequent large exits. Mason and Harrison also showed that technology deals out perform non technology deals in their period of assessment.

Wiltbank working with the support of the Kauffman and Angel Capital Education Foundations in the US in 2007 and the British Business Angels Association in the UK in 2009 showed that:

– Angels can expect an average return of 2.6 times their investment in 3.5 years for a 27% IRR in the US

– Angels can expect an average return of 2.2 times their investment in just under 4 years for a 22% IRR in the UK

Roach (2008) has conducted focused research on the world's largest angel group, Keiretsu Forum, and his assessment of annual cohort returns provides very similar findings. By 2008, the annualized returns for the cohorts in the Keiretsu Forum portfolio were 2000 - 20.38%, 2001 - 21.32%, 2002 - 28.24%, 2003 - 26.20%, 2004 - 32.46%, 2005 - 14.55% and 2006 - 20.13%

In their 2010 study DeGennaro and Dwyer focus on expected returns allowing for the time value of money. They find that angels can expect net returns 70 percent in excess of the riskless rate per year with an average holding period of about 3.67 years which exceeds Cochrane's (2005) estimate of 59% per year for VC's.

If angels investing in groups get attractive returns, how do they do so?

**Drivers of Angel Returns.** By being disciplined and ensuring they behave consistently across their angel investing activities, angels investing in groups appear to raise the probability of achieving an attractive return. Wiltbank shows that angel returns appear to be correlated with:

**Due Diligence Focus.** Conducting significant hours of collaborative expert based due diligence drives returns. 65% of the exits with below-median due diligence reported less than 1x returns, whereas when angels spent more than 40 hours doing due diligence they experienced a 7.1x multiple

**Industry Expertise.** Angels earned returns twice as high for investments in ventures connected to their own industry expertise and many of their best exits came in this way

**Interaction with Portfolio Companies.** Angels who interacted with the venture a couple of times a month after making their investment experienced a 3.7x multiple in 4 years, whereas investors who participated a couple of times a year experienced multiples of only 1.3x in 3.6 years.

So investors wishing to achieve the attractive returns of angel investing would be wise to join and be active in angel groups that share these three characteristics in their organizational cultures:

Disciplined and thorough due diligence processes driven by the angels themselves

Associations of angels who bring expertise from a breadth of industries and sectors and who are looking to invest utilizing their expert knowledge

Relations with portfolio companies marked by active participation of the investor angels, and the broader angel group - everyone working together to help the companies succeed.

These behaviors being in marked contrast to organizations that may do low due diligence or external professional due diligence, may be led by investors who themselves do not have expertise in the industries of the portfolio companies, and/or which may focus on being passive after the investment is made - rather than at the extreme of active investing.

# CONCENTRATED RETURNS REQUIRE DEAL DIVERSIFICATION...

The academic research on angel returns also highlight a critical consideration. As with VC investing, angel returns are highly skewed. While angels have a lower failure rate than VC's, they still rely upon a handful of large exits for the bulk of their return:

> Mason and Harrison report 34% of exits at a total loss. 13% at a partial loss or break-even. But 23% showing an IRR of 50% or above and 10% of those being investments with IRR's exceeding 100% driving most of the investor return.

> Wilbank puts this even more succinctly. In the US he found 52% of all exits returned less than the capital invested, while just 7% of the exits achieved returns of more than 10x the money invested accounting for 75% of the total return to investors.

> This meant that in the Wiltbank US sample, while the average return of 27% was very attractive, fully 39% of investors in the study had portfolios that did not return them their capital (multiple of less than 1x)

So while angel investing is less of a "hit driven business" than VC investing, it still relies heavily upon infrequent, high multiple exits to drive the average return. The only way to have a statistically relevant chance of capturing these infrequent situations in an investor's portfolio is of course to be diversified - to invest in a large enough number of deals to raise the probability of the portfolio behaving like the average portfolio.

Researchers have suggested that more than 15 angel investments in a specific area of focus may provide sufficient diversification at the aggregate level - although to be diversified at the industry or sector level would require similar levels of diversification within each investment category (e.g. an investor wanting to be diversified in each of software, healthcare and IT services might need a portfolio of 3x15 or 45 investments assuming no overlap). However, researchers find angels do not accomplish this diversification goal:

> In their 2010 US work DeGennaro and Dwyer found that the average angel investor in their sample was investing 13% (mean) and 10% (median) of their wealth into angel investments. However, on average these investors were only investing in 16.2 angel investments each, which would imply just sufficient diversification at the aggregate level only.

> In the UK, Mason and Harrison (2011) found that the majority of respondents (72%) had made at least one investment during 2009/10. However, the median amongst those was two investments and there was only a small tail of more active investors who had made more than five investments implying very little diversification.

The implication being that few angels are investing at a rate likely to build a highly diversified portfolio across industry sectors despite the significant benefits of doing so.

# ...BUT PRACTICAL CONSTRAINTS MEAN MOST ANGELS ARE NOT DIVERSIFIED

Given this overview of prior research, we focused our efforts on two research questions:

1. Do angel investors understand the expected return for angel investors investing in groups
2. Do they invest in enough companies in order to be sufficiently diversified to have a high likelihood of achieving the average return to angels investing in groups?

In 2015 we asked more than 250 angel investors who are members of Keiretsu Forum in the US and Canada the following questions to assess whether they had learned from the academic research in terms of the likely returns and the number of investments they would need to make in order to have a high likelihood of capturing those returns.

Specifically we asked them:

**1.** What do you believe the expected return for angel investors investing in groups is?:

   a. Less than 10% IRR

   b. 10 to 20% IRR

   c. More than 20% IRR

**2.** How many investments do you believe you should make in order to have a statistically likely chance of achieving this expected return?

   a. Less than 15 investments

   b. 15 to 30 investments

   c. More than 30 investments

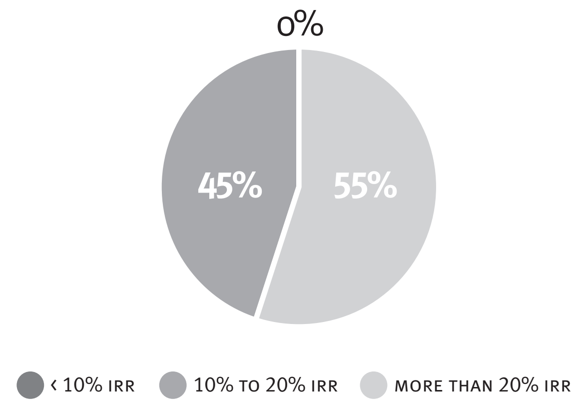
**3.** How many angel investments do you have in your personal portfolio?

   a. Less than 15 investments

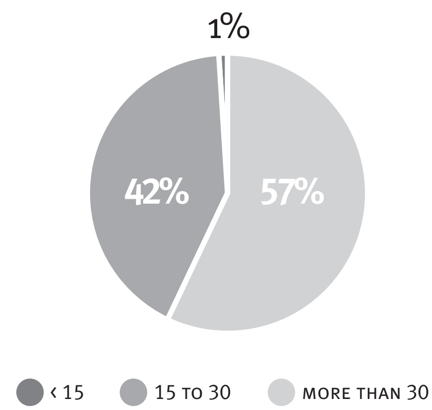
   b. 15 to 30 investments

   c. More than 30 investments

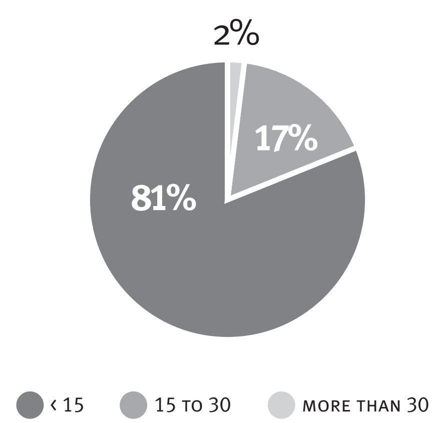
**1. EXPECTED RETURN**




**2. DIVERSIFIED PORTFOLIO**




**3. YOUR PORTFOLIO**



Our findings are:

**Realistic Expectations.** Angels have realistic and perhaps slightly low expectations for the return they expect from investing in their angel group. While the academic research suggests returns as high as 27% IRR, the angels surveyed were split between a group of 113 investors (45%) expecting returns between 10 to 20% and 140 investors (55%) expecting returns above 20%.

**Need for Diversification Understood.** Angels understand the need for diversification. The angels surveyed were split between a group of 106 investors (42%) who thought 15 to 30 investments sufficient and 144 investors (57%) who believed more than 30 investments would be necessary. 3 investors thought that a portfolio of less than 15 deals would achieve diversification. Almost all of the angels surveyed believed that diversification would be beneficial towards raising the probability of getting the angel return.

**Almost no Angels Achieve Diversification.** Conversely, while understanding what diversification implies, almost no angels surveyed have a large enough portfolio to have a statistically high likelihood of achieving the angel return. The vast majority of the angels reported that they had fewer than 15 angel deals in their personal portfolios (206 investors or 81%). 43 investors or 17% have between 15 to 30 investments. And only 4 or 2% of investors currently had more than 30 deals in their personal portfolios of angel backed companies.

Comparing these findings, it is striking to see that while 99% of angels believe that they need portfolios of more than 15 investments, only 19% of investors have accomplished this level of diversification.

Given these findings we then asked the angels the open ended question "why are you undiversified given that you understand the attractiveness of the expected angel return and the number of deals required to have a high likelihood of achieving it"?

The most common reasons given were along the following lines:

> *"My net worth will not allow me to invest in enough deals. Since most companies have a $50,000 or $25,000 minimum investment size for a direct angel investment, I would need to dedicate too much into angel deals to build the portfolio size needed for diversification. I have a maximum of 10% of my net worth for these types of investment"*

> *"I believe in the thesis that I need to do many hours of due diligence and many hours of active participation in each deal. I can't support a large number of companies as an active angel investor - 5 to 10 is about all I can cope with given the personal time commitments"*

> *'Even being active in Keiretsu Forum, I don't attend enough meetings to see enough deals that I would like to invest in, and certainly not 7 to 10 per year. I have a full time job and with vacations and other commitments I may be attending 6 or 7 times a year and investing 2 or 3 times a year"*

> *"I am uncomfortable investing outside my own area of expertise even though I know other members in the room do have that deep industry knowledge. And within my own area of expertise I don't see enough good deals a year"*

> *"I am based in city xxxxxxx, and that is where I see most of my deals. I don't see that many here each year that I want to invest in. If someone would show me deals in other cities that met my criteria and also which I could trust had been the subject of the discipline I expect when investing then perhaps that would be a solution"*

In short, the angel investors surveyed for the most part had realistic expectations regarding the angel return, understood the need for diversification given the skewed nature of returns, and had a reasonable sense of what diversification implied in terms of portfolio count. But because of practical considerations, they were unable to get there in terms of making enough investments in their own portfolios.

# WHAT IS NEEDED: LESS IN MORE DEALS – DIVERSIFY

So to summarize. While there is little academic research into angel investors, those researchers in the space have found:

- The return to angels investing in groups is viewed as attractive and perhaps as high as net annual IRR's in the mid 20's
- Those returns arrive over a 3 to 5 year timeframe with a tail of investments that may take longer to realize
- The failure rate experienced by angels as measured by exits where no capital is returned, is lower than that of venture capital investors - angels work hard to avoid capital losses
- The successful exits tend to be less skewed than the venture capital experience, but none the less, a majority of the total return is still returned by a small number of highly successful outcomes
- While this makes the average angel return attractive it also implies that a significant number of angel investors may still have portfolios that do not perform and in fact many angels do not see a return of capital
- The most practical way for an angel to raise the likelihood of capturing the angel return, is to ensure they are highly diversified - in terms of the number of companies they hold in their portfolio, and if they have a specific industry or sector focus, then at that specific level too
- Angels understand both the attractive returns possible, and the need for diversification
- However, angels are limited in their ability to achieve diversification. In practice most invest in far fewer early stage technology companies than preferable

This provides clarity to perhaps the most important challenge facing angels investing in groups. Given their capital constraints, their need to diversify and their desire to benefit from the angel return, they need to make many more smaller investments in angel backed technology companies.

**LESS IN MORE DEALS - DIVERSIFY**

# DIMENSIONS OF POSSIBLE SOLUTIONS

Today no broadly available solution exists to this challenge. The angel investment sector does not have index funds that would allow a single investment to be spread across all investments in the sector. And you would not want to invest so broadly that you also invested in angel backed deals where the preconditions of success had not been met.

Instead a possible solution would need to:

- Enable investment into technology based start-ups and early stage companies that are backed by angels investing in groups
- Allow investment alongside leading angels who are investing in groups that share the best practices that drive the angel return:
  - Consistent deep due diligence processes where the work is conducted by the angels themselves
  - Relevant and deep Industry expertise among those angels who are directly backing the company coming out of due diligence
  - Active participation in an ongoing fashion in each company by those angels who have invested in the company, and who have the expertise to drive successful outcomes
- Provide access to a large portfolio of such deals pari passu with the angels themselves - in the same round, with the same terms and conditions of the angels
- Ideally, do so as the last money into that round - given that last money in benefits from a derisked round - the round will not run the risk of raising less capital than the company had said it would require
- Do all of this in a way that does not upset the core process of the angels investing in groups - if the solution creates other behaviors, leads to adverse selection, or suffers from vested interests, then it will not accomplish the angel return but some other return.

The authors have reviewed existing solutions and are unaware of any that meet all of these characteristics and are today widely available. With Keiretsu Forum, they are working to develop such a solution at Keiretsu Capital (www.keiretsucapital.com). Their review to date has found:

- Some angel groups have side car funds, but these tend to only invest in the specific angel group concerned and most are closed to non members of those groups
- Some angel groups have funds that lead the investment process, but these funds change the fundamental preconditions of success described by Wiltbank (2007 and 2009)
- Crowdfunding platforms are beginning to offer funds that themselves invest in deals that have been syndicated on their platforms, but these deals may not share the characteristics of direct investments backed by angels investing in groups - most syndicated deals are brought by a single sponsor, many with vested interests in the success of the fundraising taking place
- Some incubators and accelerators are providing vehicles that allow a broad portfolio of investments to be made into their “graduating companies” however, it is not clear that these companies share the characteristics of the companies backed by angels investing in groups - they are also typically earlier stage companies.

The authors would welcome information about others who may have solved this angel investor challenge and are happy to share in return the approach that they are exploring with Keiretsu Forum and Keiretsu Capital (www.keiretsucapital.com).

## METHODOLOGY

In North America angel investors are notoriously difficult to research - they are, for the most part, affluent individuals who chose to make their investments through angel groups with whom they are affiliated - but they are not required to share information and most chose not to - either about their specific investing activities or about their perspectives and preferences regarding their investment activities.

As a result, this report relies heavily upon the prior work of researchers who have conducted important, and difficult research into angels investing in groups. These researchers are detailed in the following Appendix 2, and where appropriate in the body of the text.

The existing work was complemented by a survey of Keiretsu Forum members conducted by the authors during 2015. Keiretsu Forum is the largest angel group in the world with more than 2,000 angel investors in 40 chapters on 3 continents and has backed more than 700 companies with more than USD $500 million since inception. A total of 253 Keiretsu Forum angel investors were asked to provide the information that is used in this report. These angel investors all meet the accreditation requirements of the US Security and Exchange Commission (SEC). They have net worth excluding their primary residence of at least USD $1 million or annual income of USD $200,000 for each of the last three years, or $300,000 with their spouse over the same timeframe.

Our primary research focus was to gauge whether these angel investors had realistic expectations regarding the likely return for angels investing in groups, and whether they are making sufficient investments to accomplish a diversified portfolio (at the aggregate level). While this sample of angel investors is drawn from a single angel group we do think that it highlights the angel investor challenge quite well and indicates the types of solutions that might be possible.

Cumming, D., Johan, S. and Zhang, M. (2014). The economic impact of entrepreneurship: Comparing international datasets. Corporate Governance: An International Review, 22(2), pp.162--178.

DeGennaro, Ramon and Dwyer, Gerald. (2010). Expected returns to stock investments by angel investors in groups.

De Treville, S., Petty, J. and Wager, S. (2014). Economies of Extremes: Lessons from Venture-Capital Decision Making. Journal of Operations Management.

Ernst & Young, Adapting and evolving: Global venture capital insights and trends 2014, 2014.

Faria, A. and Barbosa, N. (2014). Does venture capital really foster innovation?. Economics Letters, 122(2), pp.129--131.

Grilli, L. and Murtinu, S. (2014). Government, venture capital and the growth of European high-tech entrepreneurial firms. Research Policy. Ibrahim, D. (2010). Financing the Next Silicon Valley. Wash. UL Rev., 87, p.717.

Le Merle, M., Le Merle T., and Engstrom, E. (2014). The Impact of Internet Regulation on Early-Stage Investment. Fifth Era LLC

Le Merle, M., Davis, A., Le Merle F. (2015). The Impact of Internet Regulation on Investment. Fifth Era LLC

Mason, Colin M. and Harrison, Richard T. (2002). Is it worth it? The rates of returns from informal venture capital investments. Journal of Business Venturing 17 (2002)

Mason, Colin M. and Harrison, Richard T. (2011) Annual Report on the Business Angel Market in the United Kingdom: 2009/10

McCahery, J. and Vermeulen, E. (2013). Conservatism and Innovation in Venture Capital Contracting. Lex Research Topics in Corporate Law & Economics Working Paper, (2013-2). National Venture Capital Association, Venture Capital Review, Issue 29, 2013. NVCA.

National Venture Capital Association, NVCA 2014 Yearbook. NVCA Publishing.

OECD (2011) Financing High Growth Firms: The Role of Angel Investors, OECD Publishing.

OECD (2012), Internet Economy Outlook 2012, OECD Publishing.

OECD (2013), Entrepreneurship at a Glance, OECD Publishing.

PricewaterhouseCoopers and NVCA, Moneytree Report (2014)

Roach, G. Angel Investing Worth the Effort? A study of Keiretsu Forum. 2008

Scheela, W., Isidro, E., Jittrapanun, T., Trang, N. (2015). Formal and informal venture capital investing in emerging economies in Southeast Asia, Springer Science+Business Media New York 2015

Sohl, Jeffrey. (2014) "The Angel Investor Market in 2014: A Market Correction in Deal Size", Center for Venture Research, University of New Hampshire. 2014.

Srinivasan, S., Barchas, I., Gorenberg, M. and Simoudis, E. (2014). Venture Capital: Fueling the Innovation Economy.

Wiltbank, R. (2009). Siding with the Angels. Business angel investing - promising outcomes and effective strategies. British Business Angels Association.

Wiltbank, R. and Boeker, W. (2007). Returns to Angel Investors in Groups.

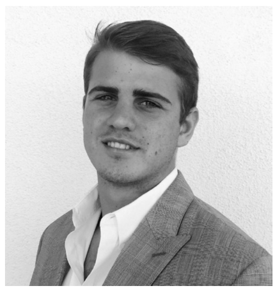
# FIFTH ERA

*Advise, Develop, Invest*

Fifth Era is an advisory and investment firm based in the San Francisco Bay Area, USA. Fifth Era advises the boards and management of leading companies, conducts business development projects, and invests in innovative teams and start-ups. Visit www.fifthera.com to learn more about Fifth Era.

**MATTHEW C. LE MERLE**

Matthew Le Merle (mlemerle@fifthera.com) is Managing Partner of Fifth Era based in San Francisco and is a General Partner of Keiretsu Capital - the co-investment fund of Keiretsu Forum (www.keiretsucapital.com). Matthew is an expert on digitization and technology transformations having advised leading companies including Bank of America, eBay, EDS, Gap, Genentech, Google, HP, Microsoft, PayPal and Tata/JLR and many other companies on related issues. Mr. Le Merle received a BA (Double First) and MA degree from Oxford University, and an MBA from the Stanford Graduate School of Business.



**LOUIS A. LE MERLE**

Louis Le Merle (llemerle@fifthera.com) is an Associate with Fifth Era based in Berkeley, USA. Louis works on Fifth Era project teams focused on Technology, Innovation and Growth oriented issues and is responsible for assisting in data gathering and analysis; industry research; interviewing key stakeholders including clients, customers, and suppliers; and working to structure and deliver recommendations and reports. Louis is studying at the University of California, Berkeley majoring in Economics, Business and the built environment.