Results from an experimental study with 798 investors



Dear participant,

First of all we would like to thank you very much for participating in our study and for your very valuable contribution.

As we described in our initial invitation to this study, with this report we would like to provide you with insights on the captured information. This way, we hope that you can also profit from our research and benchmark yourself against these initial results.

This report is a comprehensive summary of all data captured in our study and is divided into three main sections: 1) Descriptive insights, 2) Decision making preferences, 3) Linking decision-making behaviour and other characteristics to financial performance. These insights are the preliminary results from the first analysis of the data and therefore represent initial findings.

Thank you for your contribution. We wish you a fruitful read. Feel free to get in touch with us if you have any comments, questions or suggestions.

All the best,

René Andres and Jörn Block

Table of content	Page
Introduction	1
1. Key descriptive information on the sample of participants	2
2. Decision making preferences	6
2.1 Preferences by investor type	8
2.2 Preferences by industry	9
3. Linking decision making behaviour and financial performance	10
3.1 Individual performance	11
3.2 Fund performance	12



René Andres Research Associate & PhD candidate (*Trier University*)



Prof. Dr. Jörn Block Professor of Management (*Trier University*) Visiting Professor (*Erasmus University Rotterdam*) President (*SME research institute Trier*)

Results from an experimental study with 798 investors



The goal of our research is to understand and characterise the decision-making behaviour of investors in the **financing of growth ventures**. Specifically, we want to understand the relative importance of several decision criteria (e.g. management team, business model,...) to the individual investor. Furthermore, we investigate the relationship between the decision-making behaviour and various other factors on the financial performance of the investor.





We conducted a so-called "conjoint-experiment" with 798 investors, in which each participant was asked to make a series of decisions between several growth ventures that were presented to her / him. This totalled in nearly 21,000 recorded individual decisions. With this statistical method, we can derive individual preference structures, assess the relative importance of specific criteria and combine this data with other information captured in the study.

Invactor tuna	0/	N	J			_	Gender	· Total	Partner
	/0	IN	on	participa	nts				level
VC fund	43%	343					Male	87%	92%
CVC fund	9%	70					Female	e 13%	8%
Family office	8%	60		/	/		Positio	n level	%
Growth equity fund	25%	198			Major	rity	Partne	r	52%
Buyout fund	10%	81		ĂŇ			Directo Inv. M	or anager	20% 17%
Other	5%	46					Analys	st	11%
			N÷	= 798 investo	ors*	_	Age	%	N
Type of prev. experience	%	Ν					< 25	2%	20
Startup	25%	200				_	25-34	28%	225
(mainly)					Øage	2	35-44	26%	209
Corporate (mainly)	40%	320	Majority				45-54	28%	226
Mixed	35%	278					55-64	10%	83
							>64	4%	35
						N	lajority		
Entrepreneurial background	%	_/	/ # of ventures foun	ded Educa 46% backg	tional Law round	Bu Ec	siness / onomics	Engineering	Natural science
Yes	51%			25% %	7%	77	7%	23%	11%
No	49%			N	52	61	.7	185	85

Ph.D. research – René Andres (Trier University) | <u>andres@uni-trier.de</u> | +49 651 201 3031 Prof. Dr. Jörn Block (Trier University) | <u>block@uni-trier.de</u> | +49 651 201 3030

Results from an experimental study with 798 investors



1. Key descriptive information on the sample of participants

In this section, we would like to share with you further insights based on descriptive information of the collected data on the individual and investor-level. Based on this information, you can already benchmark yourself to the global population of investors that participated.

Looking at the previous page, we can already gain first insights into the participants population. First, we can see that 13% of our respondents are female. Looking at partner positions within the investors, we can find that this figure decreases to **8% of partners being female**. The majority of the respondents have a business or economic educational background (77% of all participants). There is a smaller fraction with engineering or natural science education.

Interestingly, the **population is nearly 50/50 split between former entrepreneurs and non-entrepreneurs**. Looking at the geographical distribution of the participants, we can see that the majority come from Europe, followed by the US (see table below).

Region	Europe	North America	South America	Asia	Oceania	Africa
%	61%	25%	2%	10%	2%	0.2%
Ν	486	199	16	80	15	2



Moreover, we asked what type of services the investors provide to their portfolio companies. As seen in the table on the right, the majority of investors supports their portfolio with strategic advise and client introductions. In contrast to this, only 59% indicated to support their portfolio in recruitment of new staff or venture. board members to their Occasionally, we could find investors that also offer technical or legal advise to their portfolio.

We also asked all investors about their percentage of deals executed with foreign ventures relative to all their deals. Based on the entire sample, we found that the global median is located around 17% of all deals being deals with foreign ventures. This figure is higher in Europe compared to North America and we mainly attribute this to the quantity of different and smaller economies in Europe. We initially also looked at a potential association between % deals of cross-border and the financial performance of the investor (measured as the IRR), but could not find a statistically significant relationship.

Service	% of investors that provide these services
Strategic advise to founders	91%
Client introduction	81%
Mentoring of management	76%
Support next fundraising	70%
Recruitment support	59%
PR or marketing support	30%
Legal advise	22%
Technical or operations support	2%

Ph.D. research – René Andres (Trier University) | <u>andres@uni-trier.de</u> | +49 651 201 3031 Prof. Dr. Jörn Block (Trier University) | <u>block@uni-trier.de</u> | +49 651 201 3030

Results from an experimental study with 798 investors



1. Key descriptive information on the sample of participants:

We also asked participants regarding several other topics that include their syndication preferences, limited partner structure and performance indicators.

Starting with the syndication preferences, where we asked participants to indicate their preference in regards on syndication, we could find a quite even distribution of the answers as seen in the table to the right-hand side. Combining this data with the type of investor, we can see that only CVCs and VCs have a strong interest in investing together with others, whereas growth equity funds, buyout funds and family offices showed a stronger preference for investing alone. Especially **CVCs** respondents indicated a **strong preference to invest with > 1 investor**.





Syndication preferences I prefer	Frequency N=798	Subsample: CVCs N=66	Subsample: Growth equity fund N=187
investing alone	24%	3%	45%
investing together with one investor	27%	31%	20%
investing together with > 1 investor	25%	49% !	10%
none – "I am indifferent"	24%	17%	25%

Next to syndication, we also looked at the limited partner structure of the investor, split between private individuals, private institutions and public institutions. Not surprisingly for CVCs and family offices, nearly 100% of their funding comes from their parent company or private individuals (family), with only occasionally money coming from other LPs. Looking at VCs, growth equity and buyout funds we can see a more mixed LP structure (see table on the left). Next to private institutions being the biggest LP for these 3 types of investors, public or institutions governmental also contribute significantly to the funding of these investors with a global average of 29% of the capital coming from these LPs.

Further interesting data captured, considered the financial performance of the investor on both individual and fund level. First, we asked individuals regarding their personal performance in cash-to-cash multiples in deals they participated (see table on the left). The respondents needed to indicate what share (in %) of deals they participated in returned the respective cash-to-cash multiples. The blue dots represent the median value of the respondent

Results from an experimental study with 798 investors



1. Key descriptive information on the sample of participants

and show that only a small fraction of investors have ever participated in deals that returned >10x invested capital. Looking at the median (= 0%), we can see that **more than** half of the investors that participated never participated in a deal that returned > 10x invested capital. The actual figure of participants never participated in a 10x deal is 70%.

We also asked respondents about the average IRR of their fund, resulting in the graph on the right hand side. Similar to the cash-to-cash multiple, only a few funds are able to return very high returns (> 40% IRR).

Moreover, we compared the group of respondents with an IRR > 31% (group 1) and the ones with an IRR < 31% (group 2) by various characteristics to indicate the first differences between the groups. The results are illustrated on the right-hand side. Important in this respect is that these figures do not allow casual relationships and can only illustrate differences between the two groups. One rather consistent pattern we found was that investors with entrepreneurial background were associated with higher financial performance.



To give further information on the sample, find below the experience level and tenure of participants, the number of board sets held in portfolio ventures and their industry investment focus. As seen below, the **average experience of the participants** in investing in ventures is **around 10 years** with an average tenure with the current investor of around 6 years , the majority of participants are present on > 4 boards and mainly invest in software.



Results from an experimental study with 798 investors



2. Decision making preferences

Within the study, we asked all participants to make several decision between several presented growth ventures to assess the preference structure. These ventures differed in numerous characteristics that included:

- **1. Relevant track record of management team** (none with track record, some with track record, all with track record)
- **2.** Revenue growth (10%, 20%, 50%, 100%)
- 3. Profitability (profitable, break even, not profitable)
- 4. Current investors (no external investor, unfamiliar investor, Tier 1 investor)
- 5. Business model (lock-in, innovation centered, complementary offering, low cost)
- 6. International scalability (easy, moderate, difficult)
- 7. Value-added for customers (low, medium, high)

In the following section we would like to give you insights into the preferences that participants expressed through this experiment, when making screening decisions on growth ventures and how they differ by investor type and industry.



Decision criteria	Relative importance	Rank
Management team (track record)	16%	3
Profitability	11%	5
Revenue growth	22%	1
Current investors	7%	7
Business model	10%	6
Value added for customers	19%	2
International scalability	12%	4

The table above represents the relative importance that investors attributed to the seven criteria. It can be interpreted in the way that the higher the value the more relevant this criteria can be for the decision of the investor. It means that the higher the %-value, the more sensitive an investor is for changes in the criteria. In our case, the **criteria revenue growth has the highest estimates relative importance**, which means that investors attribute the highest relevance to this criteria within their decision. Followed by revenue growth, investors saw **particular relevance of the value-added of the product or service for customers** (e.g. user experience, cost saving,...). The third most important criteria was the relevant management of the track record. An attribute that investors on average only put minor importance to were the current investors of the growth venture. The next table will give more insights into the seven criteria and the value to investors.

Results from an experimental study with 798 investors



2. Decision making preferences

Looking further at the criteria, we can estimate the individual utility / importance that investors attributed to the individual levels to get further insights on the decision making behaviour.



The graphs on the left-hand side represent the utility / relevance that investors the respective attributed to criterias within their decisions. Higher values on the y-axes represent higher utility to the investor. Looking at the bottom two criterias (business model and current investors) we can see the following:

Investors showed clear а preference for business models that are innovation-centred (e.g. based on a technology) and models that are mainly characterised by а lock-in design, which makes it difficult for customers to switch to another provider (e.g. marketplaces). Between the two, lock-in designs were the preferred ones.

Looking at the current investors, we can see that participants saw high а importance of Tier 1 investors already invested, whereas they were indifferent between no external investor present or the venture already had unfamiliar investors present.

Looking at the other criteria, the management team showed a non-linear utility, which means that it is important for investors that at least some members of the management have a relevant track record. In this vain, all team members having a relevant track record (compared to some) adds not as much utility to the investor as from no team member to some team members having a relevant track record. For the **revenue growth we can identify a slightly exponential utility**, meaning that more revenue growths offers a significant utility increase to investors. For all the others we can see a more or less linear utility development for the different levels of the criteria.

Results from an experimental study with 798 investors



2.1 Preferences by investor type

We further split the relevance that participants attributed to the different criteria of a growth venture by the investor type. This way, you can benchmark your own preference structure within your investor type. The difference in importance can be found below:

Investor types								
Decision criteria	VCs <i>N</i> =324	CVCs <i>N=66</i>	Family Offices N=60	Growth equity fund N=181	Buyout fund N=78			
Management team (track record)	15.4	15.3	16.9	17.6	12.3			
Profitability	7.3	8.5	17.6	16.3 !	24.0			
Revenue growth	24.1 !	17.7	18.6	22.1	14.8			
Current investors	9.6	12.1 !	9.1	6.4	6.0			
Business model	10.0	11.7	10.5	9.7	11.1			
Value added for customers	19.4	21.8 !	15.9	16.2	15.4			
International scalability	13.9	12.8	11.1	11.4	16.8 !			

Relative importance of criteria by investor

The table above again represents the relative importance that investors attributed to the seven criteria, split by investor type. The relative importance can be compared across the different columns of investors. As seen in the table above, the analysis shows that some significant differences can be identified. Looking at VCs vs CVCs we can see that for VCs the most important criteria is the revenue growth of the venture, whereas for CVCs this is the value added of the product or service for the customer. Furthermore CVCs are across all other investors the group of investors that put the highest importance to the criteria of current investors of the venture. This finding is also matching with the initial descriptive analysis, where CVCs reported significant interest to syndicate with other investors. Particularly, when Tier 1 investors have already invested in the venture, this seem to be a very strong signal for CVCs compared to other investors. For both, VCs as well as CVCs, the profitability was the least important criteria when assessing growth ventures. In contrast to this, family offices and growth equity investors put a strong importance on the profitability of the venture and not as much importance on the current investors or the value added of the product or service for the customer. Interestingly, growth equity investor seem to put more importance to the track record of the team than VCs, but in contrast to not weigh as much importance as VCs to the easiness of scaling the business internationally. Further analysis showed that the most preferred business model differs between investor type. Buyout investors and growth equity funds showed their significant preference for lock-in business models, whereas CVCs, family offices and VCs showed more preference for innovation-centered models. Within the last group of investors, buyout funds, the analysis showed that particular importance was put on the profitability and the scalability of the business.

Results from an experimental study with 798 investors



2.2 Preferences by industry focus

In addition to the analysis of decision criteria by investor type, we split the analysis by industry focus of the fund, to further identify differences. The table below splits the relative importance of the different decision making criteria by the industry focus of the investor.

Relative importance of criteria by industry focus

	Industry focus								
Decision criteria	Software N=510	IT infrastructure & hardware N=302	Financial services N=260	E-Commerce N=273	BioTech or healthcare N=279	Consumer products & services N=319	Industrials & industrial technology N=304	Energy N=130	
Management team (track record)	14.9	14.4	14.6	13.4	16.2	14.9	16.3	16.4 !	
Profitability	11.8	12.8	12.6	8.5 !	13.5	14.5	16.3	14.6	
Revenue growth	24.2	25.2	24.0	28.1	16.6 !	21.1	18.8	18.4	
Current investors	8.0	8.5	7.8	9.3	9.0	7.7	7.6	8.1	
Business model	10.5	10.9	10.3	9.6	10.7	10.1	9.5	10.7	
Value added for customers	18.0	17.1	18.7	16.8	20.9 !	18.3	17.4	17.3	
International scalability	12.3	11.9 ≈	12.0	14.0	12.8	13.1	13.8	14.2	

The table above again represents the relative importance that investors attributed to the seven criteria's split by industry focus of the investor. We could identify some groups of industries investors invest in, that showed similar preferences across the respondents. Investors which invest in software and IT infrastructure & hardware and financial services yielded very similar preferences with **high importance put on revenue growth and value added of the product** / **service for customers**. Looking at investors investing in E-Commerce, the results indicate that profitability is less important for these investors as well as the track record of the management team. Here the dominant decision criteria is the revenue growth of the growth venture and the easiness of scaling the venture internationally. Looking at investors focussing in BioTech or healthcare, the investors showed a strong focus on the value added of the product / service for customers. Also the track-record of the current management team plays a higher importance compared to other industry focused investors. Between investors focusing on consumer products & services and investors focusing on industrials & industrial technology, we can find differences in the importance attributes to revenue growth, management team and profitability. All other criteria approximately yield similar importance.

Results from an experimental study with 798 investors



3 Linking decision-making behavior and financial performance

Next to describing the decision-making criteria and their importance to investors, we also tried to assess the association between various factors, that include the decision making preferences, to the financial performance figures. The concept below illustrates the analysed concept, where we tried to analyse different factors and if they can explain differences in two different financial performance figures (1st individual cash-to-cash multiple, 2nd IRR of the fund).

Analysed concept



To analyse if factors have a statistically significant influence on the two financial performance figures, we use several regression methods. It is important to note that these analysis can only yield initial association, but can not be interpreted as a causal effect in the way that a factor A has a causal effect on increasing the IRR for example. In the following two pages, we will summarize the results of the regression models and give guidance on the interpretation of them. The analysis is spilt between the two different financial performance figures.

Results from an experimental study with 798 investors



3.1 Individual performance

Within this section, the results of the analysis regarding the individual measure are presented. The table below represents a summary of the findings. We used different regression methods in order to identify the factors that are associated with statistically significant higher or lower returns.

Statistically significant effects

Variables associated with significant higher performance (+)

- Being a former entrepreneur
- Holding board seats in portfolio companies
- Investing alone (no syndication)
- Mixed experience as entrepreneur and working in large firms
- Providing the following value added services to portfolio companies: client introduction, recruitment and support in follow-up fundraising
- Investors that put higher importance than the average on:
 - Innovation-centered business models (compared to low-cost or lock-in business models)
 - Revenue growth
 - Value added of the product / service
 - Easy international scalability of the business

Variables associated with significant lower performance (-)

Investing together in larger syndicates

Not statistical significant effects

Variables not associated with significant higher or lower performance

- Gender of the investor
- Age of the investor
- Educational background
- Length of experience as investors
- Tenure with current investor
- % of cross-border deals
- Providing the following value-added services to portfolio companies: Legal advise, mentoring and strategic advise to founders
- Investors that put higher importance than the average on:
 - Current investors containing Tier 1 investor
 - Track record of the team

Again we want to point out, that these are associations and cannot be interpreted as causal effects. They can give an indication but as we do only measure the variables on an aggregate level and not on an individual portfolio company level, there are effects we cannot control for. We also assessed the association of the various variables with being under the top 10% of investors, leading to similar results as above.

Individual

cash-to-cash

multiples

0

Results from an experimental study with 798 investors



3.2 Fund performance

Within this section, the results of the analysis regarding the fund level measure are described. The results are slightly different to the ones for the individual performance measure. Many variables that have shown statistically significant results in the previous analysis, are not statistically significant regarding the fund level performance measure. As we measure the majority of variables on the individual level, the fund performance may also be influenced by other people in the fund. This makes it difficult to find associations. You can also see this in the correlation between individual cash-to-cash multiples and IRRs. The correlation between IRR and cash-to-cash multiple is 0.39 and statistically significant. What we can also assume from this figure is, that high individual cash-to-cash performance does not necessarily need to be associated with high IRRs, meaning that there are other people in the investor that perform lower than the asked respondent.

Very consistent with the finding before is that being an entrepreneur is statistically significant associated with higher IRRs.

Appendix:

Innovation-centered business models: Business model that brings innovation in the form of new technology, products or services to consumers (e.g., new software technology or new materials)

Lock-in business models: Business model with the power to keep customers attracted and "locked-in". These business models have high switching costs for customers, which prevent them from changing to other providers (e.g., online marketplaces (eBay) or social media platforms (Facebook))

Low-cost business models: Business model focusing on reducing costs for customers for already existing products or services (e.g., low cost airlines or IT outsourcing services)

Complementary-offering business models: Business model that bundles multiple goods or services to generate more value for customers (e.g., online travel agent that offers booking service, credit cards and travel insurance)

This is the first analysis of the data, there will be more analysis done and we are more than happy to update you on further insights. If you have further questions or suggestions, please contact:

Andres@uni-trier.de