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HHL LEIPZIG GRADUATE SCHOOL OF MANAGEMENT

Risk management in venture capital funds: The perspective of portfolio companies

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Our paper aims to analyze how VC companies manage risk in their portfolio companies

Overview of the paper

Introduction to the topic

- VC investments are **high risk** and high return investment (LiPuma and Park, 2013)
- Even though a time and cost intensive investment screening and selection process, the **failure rate** of portfolio companies of VC companies is still **at 35 to 50 %** (Zacharakis and Meyer, 2000)
- **Comprehensive risk management** applied by VC companies might lead to a **lower failure rate** of their investments

Motivation of paper

- VC investment risk is an **important research topic**, but largely unsystematic and not easy to diversify (Manigart et al., 2002)
- There is **only few literature on risk management in VCCs** in the last decade; literature in the field of risk management on the portfolio level is especially rare

Our approach

- ***RQ: How to VC companies manage risk in their portfolio companies?***
- We conducted a **structured literature review** and derived hypothesis concerning the impact of risk management measures on the failure of portfolio companies
- We empirically tested this hypothesis using a **structural equation modeling approach**

We started with a structured literature review to develop hypotheses on different risk reducing measures to reduce failure risk

Structured literature review on risk management on the portfolio company level

- Analysis of all entrepreneurship journals ranked in the 55th edition of the Harzing Journal Quality List from 2005-2015 regarding the keywords “risk”, “risk management”, “venture capital” and “failure”
- Search in the EBSCOhost Online Research Databases for the same keywords in titles and abstracts of all types of academic journals from 2005-2015

1 Short list of 25 relevant papers

Reference	Sample	Data collection method	Data analysis method
Bamford and Douthett (2013)	IPOs n = 545	Investors Daily Digest and Barron´s	Descriptive statistics Logistic regression OLS estimation
Bengtsson and Sensoy (2010)	Private partnership VCs n = 646 Start-up companies n = 1,266 Investment rounds n = 1534	Private Consulting firm VCExperts	Descriptive statistics Correlations Kruskal-Wallis test Probit regression OLS regression Heckman-Sorensen Index
Cumming et. al. (2005)	Investment rounds n = 18,774	VentureExpert	Descriptive statistics Logit regression Poisson regression Comparison of proportions and means tests Correlations
Hopp (2010)	Capital contributions n = 2,373 (961 ventures and 437 VCCs)	Thomson Venture Economics	Descriptive statistics Correlations Logistic regression
Hopp und Lukas (2014)	VC investments n= 2,373 in Germany	Public sources and Thomson Venture Economics	Descriptive statistics Correlation matrix Weibull duration model Heckman type selection model
Kut et. al. (2007)	Venture capital and buy-out funds n = 142	Survey	Descriptive statistics Mann-Whitney test Pearson chi-square test
Kut et. al. (2006)	Venture capital and buy-out funds n = 142	Survey	Descriptive statistics Mann-Whitney test Pearson chi-square test Logit regression OLS regression

2 Identified risk types in literature review

Risk types:

- Agency risk
- *Liquidity & financial risk*
- *Technology risk*
- *Market risk*
- *HR risk*
- Internationalization risk
- Macro risk

= *Failure risk*

3 Hypotheses development

Development of five hypotheses regarding their impact on failure risk:

- Assessment and evaluation of new ventures
- Financial contracting
- Investment manager's skills and experience
- Governance mechanisms
- Value adding services

Five hypotheses were developed on the different types of risk reducing measures identified in literature

Hypotheses development

Risk measure	Main literature	Hypothesis
Assessment and evaluation of new ventures	Kut et al. (2007), Lu et al. (2006, Smolarski et al. (2005)	*H1: Assessing and evaluating measures are negatively related to failure risk of VCCs´ portfolio companies.*
Financial contracting	Bengtsson and Sonsey (2011), Kut et. al. (2007)	*H2: Financial contracting mechanisms are negatively related to failure risk of VCCs´ portfolio companies.*
Investment manager´s experience and skills	Hopp & Lukas (2012)	*H3: Investment manager´s experience is negatively related to the failure risk of VCCs´ portfolio companies.*
Governance	Tan et. al. (2008)	*H4: Governance mechanism like milestones and reporting are negatively related to failure risk of VCCs´ portfolio companies.*
Value-adding services	Bottazzi et al. (2002), Cumming et. al. (2005)	*H5: Value-added services provided by VCCs are negatively related to failure risk of VCCs´ portfolio companies.*

Our sample consists of longitudinal data directly collected at the venture capital company

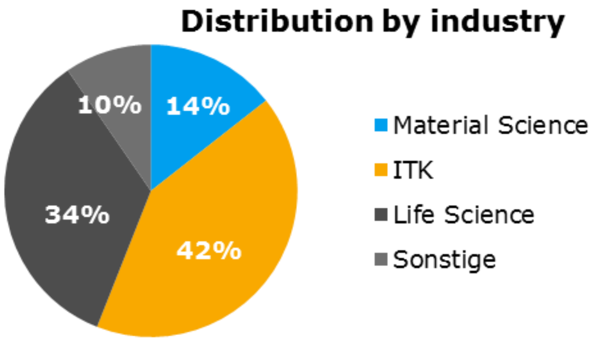
Method: Overview of sample

Sample description

- Longitudinal empirical data of 93 venture capital-backed new technology-based firms from a mixture of private and public funds
- Access to the original deal documents including business plan, investment committee decision papers and the monthly reporting
- Survey with the investment managers
- Performing a detailed content analysis collecting quantitative as well as qualitative data

Descriptive statistics of sample

Variable	Average
Age of portfolio companies	5.1 year
Size of founders team	3 members
Number of founding rounds	2 rounds
Investment sum Seed	700,000 Euro
Investment sum Series A	1,000,000 Euro
Number of investors Seed	2 investors
Number of investors Series A	3.5 investors
Bankruptcies	18 companies
Trade Sale as preferred exit strategy	95 per cent



8. Selected literature

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Thank you for your attention!