PROCEEDINGS OF THE

3RD ENTREPRENEURIAL FINANCE CONFERENCE

Milan, June 26th-27th, 2018

POLITECNICO
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SCHOOL OF MANAGEMENT

Edited by: Massimo G. Colombo, Giancarlo Giudici
(Politecnico di Milano, School of Management)

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ACADEMIC PROGRAM

Venue: Politecnico di Milano, School of Management, via Lambruschini 4, 20156 Milan ITALY

June 26th, 2018

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June 27th, 2018

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3.15 p.m.	Parallel session E1 **"RESEARCH ISSUES ON CROWDFUNDING (2)"** Chair: Armin Schwienbacher *Room BL 27.01*	Parallel session E2 **"CORPORATE VENTURE CAPITAL"** Chair: Luisa Alemany *Room Aula Consiglio*		

INTRODUCTION

Entrepreneurial finance: a growing discipline in researchers' agenda

Massimo G. Colombo, Giancarlo Giudici

(Politecnico di Milano – School of Management)

Entrepreneurial finance is gaining momentum in scholars' agenda around the world. In the Scopus database, 67 contributions are listed, containing the search term "entrepreneurial finance" and published in 2018, while in 2017 they were 40, and 'only' 25 in 2016. The advent of fintech and the rise of innovative financing options like crowdfunding and token offerings, as well as incentives granted from several Governments to new business venturing, reduced the information and cost barriers to startup a new enterprise. Data paradigm offer start-ups the opportunities to introduce radical innovations, in technology and business models, creating new industries and fostering economic growth. To capture these opportunities, smart financing plays a key role. At the same time, the digital revolution opens alternative sources of finance for start-ups (crowdfunding, token offerings, angel investing), which both complement and compete with traditional sources.

The attention of scholars towards entrepreneurial finance is highlighted by the growing number of dedicated seminars, workshop and special issues of top journals. One of these initiatives is the 'Entrepreneurial Finance Conference', whose first edition was held in Lyon (2016) and then in Ghent (2017). The third edition has been organized by Politecnico di Milano in Milan, on June 26th-27th 2018. We are delighted to introduce the proceedings of the conference, that was attended by 79 participants from four continents, including New Zealand, USA, Hong Kong and India (and obviously from Europe); 66 papers have been presented in 18 parallel sessions. During the conference we had the opportunity to host two outstanding scholars, Professor Thomas Hellmann (Saïd Business School) and Professor Gary Dushnitsky (London Business School). Hellmann gave an inspiring speech on "Entrepreneurship Policy: A hopeless cause" discussing the role of public Governments in supporting venture capital activity. Dushnitsky revisited the existing theories on venture financing (where, when and why) in an appreciated keynote.

We wish to thank the sponsors: AIFI, the Italian association for private equity, venture capital and private debt, who also organised a special session on VC; Accenture Strategy and Gruppo Bertoldi / Walliance, who offered two prizes for the best papers on Innovative Entrepreneurship and on Crowdfunding.

Building on the network established during the three conferences, the 'Entrepreneurial Finance Association' has been established in 2018. It will be the opportunity for academicians and practitioners to share knowledge and experiences. The fourth edition of the Conference will be organised in Trier in 2019 and we look forward to meeting there for a new exciting event.

CONTRIBUTIONS

Parallel session A1 "VENTURE INVESTMENTS AND VALUE CREATION"

Chair: **Massimo G. Colombo**

1. *Characteristics of entrepreneurs, entrepreneurial finance, and growth paths* (**Laurence Cohen**, **Peter Wirtz**)

Discussant: **Massimiliano Guerini**

Abstract. *The aim of this paper is to better understand how entrepreneurial equity finance interacts with the complex growth process of young technological ventures. More specially, we investigate how different growth paths are influenced by the entrepreneurs' interactions with different categories of private equity investors, namely business angels (BAs) and formal venture capitalists (VCs). Through a comparative case-study contrasting one hyper-growth venture with one moderate growth venture, we show that growth paths depend strongly on the entrepreneurs being more or less able to simultaneously leverage BAs' and VCs' financial as well as cognitive resources. The entrepreneurs 'capability to do so, is shown to be dependent on their specific psychological and cognitive characteristics as well as on their decision making style.*

2. *Disentangling investor value-add: How VC specialization and investor-firm-fit affect VC value-add* (Carolin Bock, Massimiliano Guerini, **Simon Tatomir**)

Abstract. *Our research investigates how venture capitalists' (VC) specialized expertise and the fit between investor expertise and firm characteristics affect investors' ability to add value to startups. Using a unique longitudinal dataset on European venture financing and performance (VICO 4.0) and robust econometric techniques, we find that greater relative specialization negatively affects investors' value-add. Moreover, we find that greater specialization can be helpful for investor value-add in late-stage investments. Nonetheless, our results suggest that greater relative specialization improves VC selection skills and thus can be a reasonable investment strategy for VC investors.*

Discussant: **Josè Martì Pellòn**

3. *Venture capitalism and retail investors* (Daniele Previati, **Giuseppe Galloppo**)

Discussant: **Peter Wirtz**

Abstract. *Venture capital funds are typically characterized by a minimum investment size and a high level of risk. Consequently, they are generally considered unattractive to the large crowd of small investors. However, in recent years, a class of retail funds that follows an investment style similar or identical to those of private venturing funds is expanding. Although the risk-adjusted characteristics of mutual funds have been extensively documented, this type of open-end fund, which is mainly invested in small companies at early phases of their development, is rarely investigated in the literature. This work is venture capital industry analysis research that aims to investigate the characteristics of this type of open fund in accordance with the main research questions usually addressed by the literature in the mutual fund context. We relate the nature of returns to fund characteristics by taking management style and diversification into account. Finally, using a non-parametric method, we examine the persistence of fund managers. When appropriate, we compare venture capital funds and more traditional investments. The results*

highlight that open-end venture fund returns are sensitive to similar risk factors to those of mutual funds and they also show an identical persistence pattern. The results are also robust to alternative econometric specifications. Moreover, when part of portfolio is invested in similar assets, the whole portfolio benefits in terms of overall diversification.

4. *What money cannot buy: a new approach to measuring venture capital non-financial value added* (Anita Quas, **Josè Martì Pellòn**, Carmelo Reverte)

Discussant: **Giuseppe Galloppo**

Abstract. *In this work we present evidence on the impact of venture capital (VC) financial and non-financial value added on the growth performance of investee companies based on a new approach. While most of the literature compares VC-backed companies with similar companies that did not receive external financing, in this paper we use as counterfactual those companies that received external quasi-equity financing (in the form of participative loans) but not non-financial value-adding services. We use a difference-in-difference-in-difference (DDD) estimator to isolate the contribution of the non-financial value added by the VC firm and disentangle it from the effect derived from the injection of financial resources (financial value added). Starting from the populations of young Spanish companies that received either VC (985) or participative loans (1,840) between 2005 and 2013, and a control group of 20,539 companies, we find that about one third of the impact on the employment growth of VC-backed companies is due to the non-financial value added. The contribution of VC non-financial value added is relatively higher for total assets (40%) and sales (almost 60%) growth. Furthermore, we show that the non-financial value added by VC is driven by VC firms with more capital under management, with broader experience and with a lower number of companies to oversee per portfolio manager.*

Parallel session A2 "EQUITY CROWDFUNDING"

Chair: **Silvio Vismara**

1. *Market analysis, economics and success drivers of equity crowdfunding* (**Salvatore Luciano Furnari**)

Discussant: **Carine Girard**

Abstract. The main scope of this paper is to identify which are the determinants on equity crowdfunding development from two different points of view: (i) the one of the market; and (ii) the investor's one. In order do so, after a brief introduction of equity crowdfunding and of its more relevant dynamics, the first part of this paper deals with factors determining equity crowdfunding market development while the second identifies the drivers that attracts investors participation, testing its theoretical findings with a case study on Italian equity crowdfunding platform.

2. *Why do firms fail after equity crowdfunding campaigns? Evidence from France* (Karima Bouaiss, **Carine Girard**, Constantin Zopounidis)

Discussant: **Salvatore Luciano Furnari**

Parallel session A3 "LAW, POLITICS AND GOVERNANCE IN ENTREPRENEURIAL FINANCE"

Chair: **Alexander Groh**

1. *How do firms choose legal form of organization?* (**Rebel Cole**, Tatyana Sokolyk)

Discussant: **John Duca**

Abstract. *In this study, we analyze the firm's choice of legal form of organization ("LFO"). We find that only about one in three firms begins operations as a proprietorship, while almost as many begin as limited liability companies and as corporations. Moreover, this distribution is remarkably stable over the first seven years of the firm's life. Fewer than*

one in ten firms changes LFO during its first seven years. Those that do change LFO disproportionately move to a more complex form, primarily from proprietorship to a form with limited liability. Our analysis of the firm's initial choice of LFO reveals that a firm chooses LFO based upon factors that include access to capital markets, tax consequences, and personal liability and risk exposure. At start-up, the entrepreneur chooses a LFO that can accommodate the expected future complexity of her firm. FULL PAPER AVAILABLE

2. *The impact of the Dodd-Frank Act (Basel III) on U.S. small business* (**John Duca**, Michael Bordo)

Discussant: **Rebel Cole**

3. *The evaluation of the Italian Startup Act* (Francesco Manaresi, Carlo Menon, Pietro Santoleri, **Giovanni Soggia**)

Discussant: **Vincenzo Capizzi**

Abstract: The performance and growth of innovative start-ups is key to economic growth: policy makers are therefore interested in understanding which types of interventions and policy instruments successfully impact entrants. This paper attempts to shed light on this question by providing a comprehensive economic evaluation of an innovative start-up policy implemented in Italy, known as the "Start-up Act". The analysis builds upon a unique database that combines information for all start-ups born in Italy between 2009 and 2015 on their balance-sheets and demographics, wages and employees, patent applications, and bank-firm matched data. The estimation strategy exploits the fact that firms entered treatment at different point in time because of exogenous factors. The empirical evidence demonstrates that the policy induces a significant increase in firm assets, value added, and labour productivity, while reducing the probability of exit within the first three years of life amongst policy participants. The analysis also identifies significant treatment heterogeneity depending on whether start-ups rely primarily on equity or debt as a source of external finance.

Parallel session A4 "ENTREPRENEURIAL FINANCE AROUND THE WORLD"

Chair: **Yan Alperovych**

1. *Facilitating access to entrepreneurial financing in developing countries: the role of institutional entrepreneurs* (**Carlos R. Martinez**)

Discussant: **Yuejia Zhang**

Abstract. *This paper aims to understand how institutional entrepreneurs address barriers that hinder entrepreneurial financing in developing countries. The grounded theory method was used to analyze 33 semi-structured interviews with Central American actors related to entrepreneurial financing. Based on the grounded evidence, institutional entrepreneur (IE) concept, and social capital dimensions, the study proposes a model explaining how IEs improved access to entrepreneurial financing in developing countries by enabling two social capital mechanisms. The contribution to social capital theory is twofold. Firstly, the paper extends the bridging brokerage mechanism: It explains the role of the broker not only as an information gatekeeper between two disconnected networks but as a promoter of the strong ties between the members of such networks. Secondly, the paper sheds light on the causal relationship between the cognitive and relational social capital dimensions by explaining how trust ties are generated between actors with a discrepancy of expectations. The study has practical implications for organizations interested in promoting high-growth entrepreneurship in developing countries.*

2. *Structuring and security selection in venture contracts: evidence from India* (**Kuruva Ramesh**, A. Thillai Rajan)

Discussant: **Carlos R. Martinez**

Abstract. *Venture Capital and Private Equity (VCPE) investments in India have grown significantly, and between 2005-2016, the total VCPE investment in India was estimated at ₹1117 billion. The issue of capital structure in VCPE has so far studied only in the context of mature or developed economies. Theoretical models predicted the use of convertible preferred equity to mitigate the agency cost and information risk associated with the venture contracts. Whereas, the outcomes from the empirical studies are confronting and not consistent with the theoretical predictions. The objective of this paper is to introduce data on venture capital contracts and analyze the structuring decisions of the VCPE investors in an emerging market, viz., India. In this study, we introduced data from the Indian venture capital, one of the unexplored major venture market in the world. We used a unique dataset comprising of VCPE investments executed in India between 1998 – 2015 in our analysis. Our sample size consisted of 1785 VCPE transactions in 1150 Private companies. We find that more than 92% of Indian venture capital contracts funded used Common and Convertible preference security. Out of which more than 52% transactions are funded using convertible preferred equity. We provide explanations for security selection and determinants of structuring in venture contracts. Our results show that Operating industry stage of the company, valuation, revenue multiple, VC experience, and stake acquired influences the structuring decisions of the venture capital contracts.*

3. *Improving the performance of Governmental venture capital firms: a case study of Shenzhen Capital Group* (**Yuejia Zhang**)

Discussant: **Yan Alperovych**

Abstract. *This paper documents how Shenzhen Capital Group (SCG) tackled typical problems faced by governmental venture capital firms (GVCs) by adopting an expansion strategy and a series of reforms in compensation, decision-making procedures and staff co-investment opportunities. I investigate the impact of these changes on SCG's performance and find that the return of SCG's total investments, as measured by the percentage of successful exits through initial public offering (IPO) or merger & acquisition (M&A), is higher than other GVCs. Furthermore, portfolio companies invested in by SCG or a SCG-led syndicate in their first round of VC financing are more likely to achieve successful exits that those by other GVCs. This paper provides evidence that GVCs can improve their performance by better aligning the interests of investors and venture capitalists.* FULL PAPER AVAILABLE

4. *Social defenses and selective revealing of ventures in Europe and Latin America* (**Theresa Veer**)

Discussant: **Erkan Ilhantekin**

Abstract. *In this paper, we empirically explore the defense mechanisms of new ventures during their relation with an international corporate venture capitalist (CVC). Our analysis uses proprietary data on more than 500 new ventures from the ICT industry in Europe and Latin America. We find that new ventures frequently form ties with a CVC despite the higher exposure to misappropriation risk from the greater overlap in the business models and weaker protection of intellectual property. We provide evidence that new ventures use social defenses to protect them from this misappropriation risk. These defenses include seeking protection through third party investors and selectively revealing their proprietary information to the CVC. Our study contributes to the literature on how ventures defend themselves during a relation with a corporate "shark." This contribution complements the current research that predominantly focuses on defense mechanisms before tie formation. Furthermore, our findings compare ventures in very different intellectual property regimes that enriches the discussion on the relevance of intellectual property in the CVC-venture context.*

Parallel session B1 "PUBLIC VENTURE CAPITAL AND SUBSIDIES"

Chair: **Vincenzo Capizzi**

1. *Are governments good venture capitalists? New cross-country evidence from micro-data* (Stefano Breschi, Nick Johnstone, Julie Lassebie, **Carlo Menon**)

Discussant: **Thomas Standaert**

2. *Startup subsidies: does the policy instrument matter?* (Hanna Hottenrott, **Robert Richstein**)

Discussant: **Matthias van den Heuvel**

3. *When can government venture capital funds bridge the equity gap?* (Yan Alperovych, **Alexander Groh**, Anita Quas)

Discussant: **Laurence Cohen**

Abstract. *Several papers have found that government venture capital (GVC) funds do not add (much) value to their investees, underperform in comparison to their private peers, and crowd out private investments. Nevertheless, "bridging the equity gap" is allegedly a major objective of public initiatives in the market for start-up financing. This paper addresses the conditions under which GVC funds may fulfill this mission in the best possible way. Our data reveal that the competitiveness of a region in which a GVC fund invests, strongly positively affects its ability to bridge the equity gap, whereas potential collusion and regulatory capture hinder the likelihood of success. GVC funds can improve their chances to achieve their objectives by gaining specific investee-industry experience and learning from their private peers through syndicated transactions.*

Parallel session B2 "RESEARCH ISSUES ON CROWDFUNDING (1)"

Chair: **Jose Martì Pellòn**

1. *Determinants of individual investment decisions in investment-based crowdfunding* (Fabrice Hervè, Elodie Manthè, **Aurélie Sannajust**, Armin Schwienbacher)

Discussant: **Xavier Walthoff-Borm**

Abstract. *We investigate determinants of investment decisions in investment-based (equity and bond) crowdfunding campaigns, using a novel investment-, investor- and campaign-level database, where equity refers to investments in entrepreneurial startups and bonds to large real estate projects. We find that social investors – those who have higher social interactions – invest more. Social interactions are very important in an equity crowdfunding context, but do not affect participation in bond investments; this is consistent with the view that equity crowdfunding is meant to help an entrepreneur while bond investments are pure investments and thus impersonal. Women invest less in the riskiest (equity) investments but more in safer ones (bonds). These findings are better explained by differences in risk aversion than differences in overconfidence between men and women. Overall, the findings contribute to our understanding of how investment-based crowdfunding can be a viable source of entrepreneurial finance and how entrepreneurs' campaign decisions affect investor participation in this new form of entrepreneurial finance*

2. *Birds of a feather flock together and get money from the crowd* (Valeria Venturelli, **Alessia Pedrazzoli**, Elisabetta Gualandri)

Discussant: **Evila Piva**

Abstract. *In constructing online alternative finance instruments as a new form of financial democratization and financial inclusion this article aims at describing the composition of the crowd in equity crowdfunding investment. Discussion focuses on ethnical similarities and gender dynamics between the seekers and investors that sustained the*

project. Our analysis is based on 5,966 investors that have participated in 81 equity crowdfunding campaigns, on Crowdcube, a British equity crowdfunding platform from 2011 and 2016.

Results show that equity crowdfunding facilitates the availability of capital for female entrepreneurs and ethnical minorities thanks to a similarity effect between seekers and investors. In particular, ethnic similarity positively influence the level of amount invested by both female and male investors and its effect is greater for ethnic minority.

From a theoretical perspective, our findings shed new light on how individual characteristics can be important factor in financing situations. Results allow entrepreneurs and equity crowdfunding platforms to understand better potential investor behaviour and highlights the role of equity crowdfunding as tool for minorities' financial inclusion and women entrepreneur empowerment.

3. *Crowdfunding scientific research* (Henry Sauermann, **Chiara Franzoni**, Kourosh Shafi)

Discussant: **Aurélie Sannajust**

4. *Crowdfunding, business angels, and venture capital: new funding trajectories for start-ups?* (Véronique Bessière, Eric Stéphany, **Peter Wirtz**)

Discussant: **Alessia Pedrazzoli**

Abstract. *The market for entrepreneurial equity finance has significantly evolved over the past decades and has grown ever more complex. Different investor-types, namely the crowd, business angels and venture capitalists contribute to the market, and their characteristics, investment behavior and contribution to venture governance and performance are the object of extensive research. Most of this research to date has a strong mono-investor-type focus. The present paper is a first attempt to gain deeper understanding of the complex funding trajectories made possible by various dynamic combinations of different investor types co-investing in the same venture in different configurations at different stages. An in-depth case study of a robotics venture which has successively received funding from reward-based crowdfunding, a combination of equity-crowdfunding (ECF) and various business angels (BAs), as well as a combination of ECF, BAs and multiple VCs is used to generate knowledge about the influence of such complex funding trajectories on the emergent governance of young growing ventures. It is shown that complex funding trajectories raise specific cognitive challenges for corporate governance and also raise the potential for specific agency conflicts.*

Parallel session B3 "ENTREPRENEURIAL ATTITUDE, HUMAN & SOCIAL CAPITAL"

Chair: **Cristina Rossi Lamastra**

1. *Believe or not believe? The effect of religiosity on individuals' participation on reward-based crowdfunding projects* (**Francesca Di Pietro**, Francesca Masciarelli, Andrea Prencipe)

Discussant: **Egle Vaznyte**

Abstract: This paper aims to investigate the influence of religiosity of the geographical context in which entrepreneurs reside on the success of the crowdfunding projects. Relying upon an empirical analysis of about 4,000 individual investments through two Swiss reward-based crowdfunding platforms, we found that the people's religiosity decreases the likelihood of supporting crowdfunding project. This effect differs when considering the type of project: whereas religious affiliations are positively associated to humanitarian and social-oriented project financing, they are negatively associated to start-ups and technology-oriented projects. This study opens new research avenues by extending explanations for individual investment via crowdfunding. We identify religious belief as an antecedent to individual

propensity to invest via crowdfunding and show that religions values have a different impact on the individual propensity to invest via crowdfunding depending on the nature of the project -technology vs social- oriented. FULL PAPER AVAILABLE

2. *Too much of two good things: advanced and heterogeneous education effects on start-ups' expected performance* (Michele Pinelli, **Francesco Cappa**, Stefano Franco, Enzo Peruffo, Raffaele Oriani)

Discussant: **Francesca Di Pietro**

Abstract. *As founders represent the main workforce of startups, the impact of their education composition is crucial for startup performance. The fragmentation and variance of the findings of previous research suggests that relationship between founders' education and startup performance is more complex than previously believed. We contribute to such debate disentangling different dimensions of education and assessing the following research question: Do education level and heterogeneity affect start-up expected performance? The empirical results that we obtained on a sample of 1099 start-ups support our analytical framework. In so doing, this paper makes an important contribution to research on the relationship between education and start-up expected performance by providing an explanation that reconciles opposing views of greater education level and heterogeneity. In so doing we respond to the call of further analysis of the interplay about length of education and background heterogeneity that was highlighted by previous studies. In addition, we provide start-uppers and policymakers indications of which group composition is able to positively influence expected performance and in turn funds collected.*

3. *Investors' Decision Criteria under Limited Information: Passion of the Entrepreneur as a Signal of Value and Commitment* (**Silvia Stroe**, Massimo Colombo)

Discussant: **Francesco Cappa**

4. *Entrepreneurial orientation and start-ups' external financing* (**Egle Vaznyte**, Petra Andries)

Discussant: **Silvia Stroe**

Abstract. *This study investigates the role of start-ups' strategic posture for financial decision-making. It proposes that start-ups' entrepreneurial orientation partially explains the extent to which they use external debt and external equity to meet their financing needs, with the strength of these relationships depending on industry-specific risk and venture development stage. The study tests and confirms these hypotheses on a sample of 4,404 German start-ups. It thereby advances the entrepreneurial finance literature by taking a strategy perspective, and adds insight in the relationship between entrepreneurial orientation and firm performance. It also provides valuable practical implications for start-up founders and external financiers*

Parallel session B4 "INVESTOR STRATEGIES IN ENTREPRENEURIAL VENTURES"

Chair: **Stefano Bonini**

1. *Do private equity firms pay for synergies?* (**Benjamin Hammer**, Nils Janssen, Denis Schweizer, Bernhard Schwetzler)

Discussant: **Andre Retterath**

2. *When does cheap talk help new firms? Effects of unrealized performance on resource attraction in new private equity firms* (Tom Vanacker, Daniel P. Forbes, Mirjam Knockaert, **Sophie Manigart**)

Discussant: **Benjamin Hammer**

Abstract. *Past research has shown that new firms can facilitate resource attraction in a variety of ways, for instance by affiliating with prominent others or by adopting subtle strategies of persuasion. In this study, we ask whether new firms can facilitate resource attraction in a simpler, more straightforward way—through non-binding, non-verifiable claims, or "cheap talk". Specifically, drawing on a cognitive perspective, we propose that new firms that communicate higher levels of unrealized performance are more likely to attract resources from investors. We further argue that this effect is moderated by firm characteristics. Empirically, we conduct a longitudinal analysis examining the ability of 222 new private equity (PE) firms to raise a follow-on fund. Our findings deepen our understanding of how new firms attract resources.*

3. *How to hit home runs - an empirical analysis of early-stage investment strategies* (**Andre Retterath**, Stelios Kavadias)

Discussant: **Petra Andries**

Abstract. *This paper extends the current research on entrepreneurial finance by analyzing an entire early-stage investor ecosystem, and providing the first theoretically based and empirically tested comparison of four prevalent investment strategies and their respective influence on the ultimate investor success. Primarily, we consider two opposing risk diversification strategies at the portfolio level, namely an "All eggs in one basket" and a "Spray and pray" approach, and two opposing risk diversification strategies at the firm level, namely a "Standalone or sole investor" versus a "Syndication" investment strategy. The overarching objective is to clearly identify the most promising early-stage investment strategies across industries and investor types. Accordingly, we derive a novel and comprehensive dataset from the Bureau van Dijk database as well as the Company's House database which consists of 14,575 investments between 01.01.2007 and 31.12.2016 from 12,588 investors backing 3,448 companies located in the prominent entrepreneurial cluster of Cambridge (UK). By performing a series of regression analyses, we identify how the investors' network positions and the breadth of their portfolios affect their maximum number of follow-up investments. Our findings suggest that syndication is always more successful than a standalone strategy. The extent of this effect depends both on the industry and investor type. Moreover, our findings suggest that individual investors benefit from a "spray and pray" strategy, whereas institutional investors should follow a focused "pick the winners" approach to increase their success.*

4. *Public market players in the private world: implications for the going public process* (Shiyang Huang, Yifei Mao, **Cong Wang**, Dexin Zhou)

Discussant: **Stefano Bonini**

Abstract. *Recent years have seen a dramatic increase of investment from public market institutions (e.g. mutual funds, hedge funds) in the private market. We propose a novel demand-side explanation for this phenomenon: Since institutions are able to substitute for underwriters by supporting stock prices in the secondary market, startups rely less on these underwriters, leading to less severe IPO underpricing. We find that: (1) Institutions' participation in startups reduces IPO underpricing; and (2) There is a substitution effect between institutions and all-star analysts on IPO underpricing. To establish causality, we use mutual fund scandal as exogenous shocks to mutual fund investment. We further use the 2003 mutual fund scandal as an exogenous shock to establish the causality.* FULL PAPER AVAILABLE

June 27th, 2018

Parallel session C1 "BEHAVIORAL, COGNITIVE & CULTURAL ISSUES"

Chair: **Tom Vanacker**

1. *Within-country cultural distance: does it matter for Venture Capital investments?* (**Massimiliano Guerini**, Annalisa Croce, Diego D'Adda, Anita Quas)

Discussant: **Daniel Blaseg**

Abstract. *In this paper we study how cultural distance between entrepreneurial ventures and prospective venture capital investors affect the likelihood of investment realization. Whilst other scholars addressed this question only looking at cross-border investments, we exploit sub-country measures of cultural distance to extend the analysis to domestic investments. Results highlight that sub-national cultural distances are relevant for domestic investments even more than for international deals. Moreover, cultural distance is a stronger barrier to investment realization when information asymmetries are higher, namely for younger companies operating in high-technology sectors.*

2. *On sunshine and funding: how transient shocks impact the market for entrepreneurial finance* (**Gary Dushnitsky**, Sayan Sarkar)

Discussant: **Annalisa Croce**

Parallel session C2 "VENTURE CAPITAL AIFI Special session"

Chair: **Anna Gervasoni**

1. *Investment allocation and performance in venture capital* (Scott Hsu, **Vikram Nanda**, Qinghai Wang)

Discussant: **Leonard Brinster**

Abstract. *We study venture capital investment decisions within and across funds of VC firms. We propose an investment allocation model in which VCs, with overlapping funds, are judged primarily on success of their newest funds. This induces VCs to allocate their best investment opportunities to newly-raised funds. Empirical evidence is supportive: investments in a VC's newly-raised funds are more successful than concurrent investments in older funds. Consequently, investment allocation leads to funds' early investments being more successful than its later investments. Finally, VC performance persistence across successive funds is driven almost entirely by the success of early investments in these funds.*

2. *The role of venture capital in supporting the development process of innovative start-ups: evidence from the Italian market* (Anna Gervasoni, **Francesco Bollazzi**, Andrea Odille Bosio)

Discussant: **Tereza Tykvova**

Abstract. *This research paper investigates the role of Italian venture capital in supporting innovative startups in their early-stage process, which is usually focused on the creation of a new product or the development of a new service. The aim of the study is to observe and assess the key economic features of innovative start-ups funded at the beginning of the early-stage by venture capital funds and thereafter analyze the level of development of target companies at four years since the capital injection. The sample of deals created to describe this dynamic process is composed by investments realized between 1996 and 2012 and, in this way, according to the chosen methodology, it is*

representative of Italian venture capital role and contribution in the years from 1996 to 2016. The authors used for their empirical study a proprietary database, Venture Capital Monitor – VeMTM. Through the analysis of collected data, the paper describes the strategic importance of venture capital investments in early-stage opportunities both for target companies and the Italian socioeconomic environment, and finds aggregate values of reference to quantitatively define the socioeconomic outcome of this kind of operations. A final further contribution is provided by comparing the present results to the ones of two previous studies conducted by the authors.

3. *The role of VC syndication networks in formation of strategic alliances* (Leonhard Brinster, **Tereza Tykvova**)

Discussant: **Daniel Forbes**

Abstract. *Prior research suggests that venture capital investors (VCs) are beneficial to alliance formation because they understand their portfolio companies' needs, facilitate access towards potential cooperation partners and certify their companies' quality towards these partners. For the same reasons, companies that were financed by the same VC tend to close more often an alliance than companies that do not share a common VC. We suggest that we should observe such beneficial VC involvement also within a broader VC syndication network. By analyzing strategic alliances of venture-backed biotechnology companies, we find that the VC network towards other VCs significantly improves access to potential cooperation partners. This effect outweighs the "same VC" effect.*

4. *Role of strategic alliances in VC exits: evidence from biotechnology* (**Leonhard Brinster**, Christian Hopp, Tereza Tykvova)

Discussant: **Vikram Nanda**

Abstract. *This paper contributes to our understanding of the role strategic alliances play in exits of venture-backed biotechnology companies. Recent empirical literature concludes that strategic alliances improve the probability of successful exits (IPOs and M&As) for venture-backed companies. When we control for observed and unobserved heterogeneity among the companies, for the self-selection into alliance activity and for censoring, we find a lower effect than prior studies. Moreover, we confirm a positive effect of alliances only for IPOs, but not for M&As. These findings are consistent with the view that strategic alliances help companies to certify their quality towards potential buyers. Moreover, we challenge the pervasive assumption that alliances have temporally constant effects on VC exits.*

Parallel session C3 "FINTECH DISRUPTION & ENTREPRENEURSHIP"

Chair: **Sophie Manigart**

1. *Investing in cryptocurrencies: first insights on the determinants of the return on Initial Coin Offerings* (Michele Pinelli, **Francesco Cappa**, Giovanni Maria Pinelli)

Discussant: **Paola Cerchiello**

Abstract. *Startups are increasingly adopting blockachains as an unconventional financing method to raise money for starting new businesses. Startups in exchange of funds received from investors offer them new crypto-tokens based on such blockchains, which assure the property on some assets or the right to use a particular technology. As the use of Initial Coin Offering (ICO) of such tokens is a recent worldwide trend for startups fund raising, they will bring a great shift in public capital markets, and they need to be extensively analyzed. While academic studies till now focused on exploring the effects of cryptocurrencies on traditional fundraising methodologies, the determinants of ICO performance is still an overlooked aspect that should be more deeply analyzed. Therefore with this study we assessed*

the following research question: Which are the determinants of ICO performance? The outcomes of our study provide relevant insights for academics and practitioners regarding the performance determinants of ICO. In so doing we contribute to a better understanding of such phenomena, and provide start-us a better understanding of which factors may lead to a better ICO performance which in turn may attract a greater number of funders.

2. *The Bitcoin: to be or not to be a real currency?* (Bruno Karoubi, **Nathalie Janson**)

Discussant: **Stefano Martinazzi**

Abstract. *Since its launch in 2009, the development of Bitcoin (BTC) turned out to be hectic. It has already been through a major crisis in 2013. In 2017, its price has surged from 1000 $ in January to more than 20 000$, briefly reached at its peak in December 2017. Then it kept falling throughout January 2018 reaching a lowest point early February around 7000 $ and again in June below $7000. The BTC case leads to passionate debates. Enthusiasts of the first hour see in the BTC a major disruptive innovation in the payment system while the anti-BTC considers it as a Ponzi-scheme, outcome of a "geek" libertarian frenzy. The argument often made is that the BTC does not exhibit the usual qualities expected from a currency and has no intrinsic value. Given the marginal size of its market, the issue at stake is not so much the immediate threat of the BTC to the USD than how the BTC challenges the existing monetary system. Under these circumstances, the relevant question to investigate is whether the BTC show signs of increased confidence despite its chaotic history. Confidence is crucial to increase the number of users. As stated by Menger (1892), individuals accepts a medium exchange only because they know it will be accepted by others. Confidence is determined not only by the safety offered by the system but also by the stability of the value of the currency. This is why we have chosen to investigate whether the BTC gains as a store of value over time by testing its relationship with the ultimate form of store of value: gold and Swiss franc using data from Thomson Reuters Datastream. Our findings show a long term relationship between the dollar prices of Bitcoin, the Swiss Franc and gold. An increase in the price of one asset causes a statistically significant increase in that of the two others. This suggests that BTC, gold and the Swiss Franc prices share the same determinants. Consequently, BTC exhibits increasing quality of store of value.*

3. *A conceptual framework for blockchain* (**Laura Grassi**, Marco Giorgino, Valeria Portale)

Discussant: **Anca Mirela Toma**

Abstract. *After few months of news and hype, anyone is familiar with the term blockchain but most does not really know what it refers to. Based on a systematic literature review of scientific papers, national and supra-national authorities proposals and managerial reports, corroborated with several interviews to experts and content analysis, the attempt of this paper is to propose a conceptual framework, considering its different spheres of application and views. The resulting framework shows relevant relations among several blockchain concepts as well as some peculiar features.*

4. *ICO success drivers: a textual and statistical analysis* (**Paola Cerchiello**, Anca Mirela Toma)

Discussant: **Nathalie Janson**

Abstract. *Initial coin offering (aka ICOs) represents one of the several by-product of the cryptocurrencies world. New generation start-up and existing businesses in order to avoid rigid and long money raising protocols imposed by classical channels like banks or venture capitalists, offer the inner value of their business by selling tokens, i.e. units of the chosen cryptocurrency, like a regular firm would do with and IPO. The investors of course hope in a value increasing of the tokens in the near future, provided a solid and valid business idea typically described by the ICO issuers in a white paper, both a descriptive and technical report of the proposed business. However, fraudulent activities*

perpetrated by unscrupulous start-up happen quite often and it would be crucial to highlight in advance clear signs of illegal money raising. In this paper, we employ a statistical approach to detect which characteristics of an ICO are significantly related to fraudulent behaviours. We leverage a number of different variables like: entrepreneurial skills, number of people chatting on Telegram on the given ICO and relative sentiment, type of business, country issuing, token pre-sale price. Through logistic regression, classification tree we are able to shed a light on the riskiest ICOs.

Parallel session C4 "BUSINESS ANGELS"

Chair: **Fabio Bertoni**

1. *Angel group investing: the role of social dimensions and economic-based evaluation criteria in arriving at individual decisions of the group investors* (**Li Xiao**)

Discussant: **Julian Ludat**

Abstract. *We explore how angel investors joining an angel group for early stage investment opportunities make their individual decisions along the process from screening to final decisions. Using data from two case studies and additional 44 face-to-face interviews with prospective angel group investors, we demonstrate that social dimensions to angel investing outweigh the formal collective analysis in making the individual-level decisions. We also illustrate how social dimensions that the angel investors rely on to make their individual decisions evolve over the multistage process. Interacting with one another about the conflicting interpretations of business data amongst the group investors serves distinct purposes: 1) it gives angel group investors increased confidence of relying on social dimensions to make their individual decisions and 2) it emboldens the investors to make investments that would otherwise be considered overly uncertain and likely to lead to failure. Fresh evidence on a fine-grained set of the underlying factors contributing to the decision dynamic is provided, with useful insights into the influences of these factors identified.*

2. *From pitch to Q&A: Why do business angels change their minds?* (**Zoë Imhof**, Veroniek Collewaert)

Discussant: **Li Xiao**

Abstract. *Drawing on the elaboration likelihood model, this paper develops and tests a set of hypotheses concerning why business angels change their intentions to invest within the entrepreneurial pitching stage. We test our hypotheses using a sample of 654 real-life angel evaluations of entrepreneurs pitching for money. Our results suggest a change in intentions to invest is less likely to occur when the entrepreneur has a more attractive voice, higher levels of displayed passion and higher levels of experience. Angels are more likely to change their minds though when there is a fit between angels' industry experience and industry in which entrepreneurial project is situated.*

3. *Network dynamics in business angels groups' investment decisions* (**Vincenzo Butticè**, Annalisa Croce, Elisa Ughetto)

Discussant: **Zoe Imhof**

4. *The attitude of business angels towards corporate venture capital investors: pouring money into the market is not enough* (**Julian Ludat**)

Discussant: **Vincenzo Butticè**

Abstract. *The existing literature on corporate venture capital (CVC) is shaped by a narrow view on the subject as it mostly concentrates on the perspectives of the directly involved start-up companies and established corporations. This study widens the scope of CVC research by examining the yet unexplored perspective of business angels (BAs), the most important investor group for early-stage investments. Recent empirical evidence demonstrates that CVC investors*

invest at earlier stages than previously expected, rendering direct interactions between BAs and CVC investors probable. Particularly, deal referrals from BAs may enable CVC investors to learn about new technologies and innovations early on, thus giving them a competitive advantage. Due to the resulting potential interest of CVC investors to collaborate with BAs, we ask which factors influence the attitude of BAs towards the group of CVC investors as potential (co-)investors. Drawing from an online questionnaire with N = 111 participating BAs in Germany, we find that the attitude of BAs towards CVC investors is strongly influenced by the level of social capital, imitation concerns, and the presumably high funding requirements associated with this investor group. Moreover, we find that the attitude of BAs, who have gained investment experience with CVC investors, is particularly driven by concerns about CVC investors' organizational setup. We encourage future research to further deepen the understanding of suitable measures for CVC investors to attract external parties within the entrepreneurial ecosystem.

Parallel session D1 "ATTRACTING FINANCE & TRIGGERING GROWTH"

Chair: **Evila Piva**

1. *The impact of high-tech acquisitions on the regional economy: Evidence from Ireland* (**Teresa Hogan**, Dawn DeTienne, Elaine Hutson, David Smith)

Discussant: **Luisa Alemany**

Abstract: *Government support to start-ups tends to focus on the high-tech sector, despite evidence that high-tech firms are underrepresented amongst high-growth firms. This underrepresentation may be explained by acquisitions of young high-tech firms. Using a longitudinal data set for all 258 Irish software development firms that existed in 2001, we contribute to the debate on the disadvantages and benefits to the regional economy of exit via acquisition. By 2011, a quarter of the software firms had closed and another quarter had been acquired. More than 80 percent of the acquirers were foreign, and two-fifths of the acquired firms had been closed by 2014. On a more positive note, there is strong evidence of 'entrepreneurial recycling', with more than half of cashed-out founders starting new ventures and another 10 percent reinvesting in and advising new start-ups. Entrepreneurial recycling clearly contributes to a healthy start-up ecosystem, but in an environment in which young high-tech firms face a high probability of being acquired, policymakers may not achieve their longer-term goals to create vibrant high-tech industries led by large, world-class firms. Our findings offer little support to the view that acquisitions provide a vehicle for target firms to grow in their existing location via better access to finance, new market opportunities, and improved managerial expertise.*

2. *Overoptmistic winners: antecedents of financial forecasting versus performance* (**Luisa Alemany**, Sebastian Aparicio , Antonio Davila, David Urbano)

Discussant: **Laura Toschi**

Abstract. *In this paper, we study the relationship between internal and external characteristics of startups and the accuracy of their forecast in the financial plan. We test our hypotheses with a sample of 2,148 observations, which come from 915 new ventures that applied to a startup competition in Europe in the years 2013 and 2014. As part of the selection process, startups where requested to provide one year of actuals and the forecast of sales, costs and EBITDA for the three following years. Additionally, they provided information about the venture's characteristics and their financing situation. Using a publicly available database we were able to get the actual financial accounts of 915 of the startups, which form the final sample. We find that the internationalization level and the rating received in the*

startup contest increase the gap between the entrepreneur's financial plan and the actual performance. It seems that these two characteristics lead the founders to be overconfident. On the other side, the presence of venture capitalists in the startup reduces the gap. Our results suggest that even if entrepreneurs tend to be overoptimistic and that those evaluating the startup, such as judges in a business plan competition, tend to give a higher rating to those teams, the presence of venture capital brings discipline and accuracy to financial planning. Our study contributes to the debate on why a startup's financial plan is (almost) never met and which are the critical dimensions that other stakeholders, such as investors, suppliers or employees, should pay attention to when evaluating the financial sustainability and success of a new venture. An understanding of who is more accurate at forecasting can help providers of capital to make the right decisions.

3. *Two rights make a wrong: how the clash between formal and informal green initiatives impacts on the access to finance for green ventures* (Federica Massa Saluzzo, **Laura Toschi**)

Discussant: **Teresa Hogan**

Abstract: *This paper clarifies the relationship between green entrepreneurship and environmental initiatives of different degrees of formalization. We show that the mere presence of environmental nonprofits (NPOs) may not be sufficient to spur green entrepreneurship.*

Instead, the more informal, grassroots initiatives, emerging from community members are more effective at triggering green entrepreneurship. Our paper discloses the potential clash between environmental NPOs and the social norms within a community when NPOs become too bureaucratized and professionalized and hence less in line with the spontaneous initiatives emerging at the community level. The clash has negative effects on the attractiveness of green ventures.

Parallel session D2 "FUNDRAISING STRATEGIES"

Chair: **Gary Dushnitsky**

1. *Optimal contracts with strategic exit of short-termists investors: a model* (**Guillaume Andrieu**, Alexander Groh)

Discussant: **Claire Y.C. Liang**

Parallel session D3 "SIGNALS & CERTIFICATION"

Chair: **Thomas Hellmann**

1. *Organization and finance of entrepreneurial ventures: looking beyond the surface* (**Vincenzo Butticé**, Massimo Colombo, Paola Rovelli)

Discussant: **Elisa Ughetto**

2. *Patents as collateral assets in the wake of the global financial crisis* (Federico Caviggioli, Giuseppe Scellato, **Elisa Ughetto**)

Discussant: **Jacek Przybyszewski**

3. *Long-term effects of EIF loan portfolio guarantees on SMEs' performance* (**Fabio Bertoni**, Massimo Colombo, Anita Quas)

Discussant: **Riccardo Maiolini**

Parallel session D4 "REWARD-BASED CROWDFUNDING AND P2P LENDING"

Room Aula 0.2

Chair: **Aurélie Sannajust**

1. *Distrust in financial institutions and fintech adoption: the case of P2P loans* (Anders Broström, **Ali Mohammadi**, **Ed Saiedi**)

Discussant: **Laura Grassi**

Abstract. *The volume of peer-to-peer (P2P) lending transactions has increased rapidly during the last decade. This paper empirically examines the effect of a lack of trust in financial institutions on participation in P2P lending markets. We exploit regional or state variation in lending on peer-to-peer loan markets in the US, during the period in which this market grew from untested technological opportunity into one of the largest crowdfunding markets. Our results show that the higher this distrust, the higher the likelihood of participation and higher level of participation of lenders in loans. Furthermore, we find that the effect of distrust in financial institutions on P2P loan participation is greater for larger loans and those with longer term durations, and that distrust in financial institutions plays a greater role in lending to distant borrowers. We also find a negative correlation between distrust in financial institutions and the volume of bank deposits.*

2. *Crowdfunding: backers rewarded* (**Ahmed Sewaid**, Miguel Garcia-Cestona, Florina Silaghi)

Discussant: **Cristina Rossi Lamastra**

Abstract. *Crowdfunding is becoming a significant source of funds for entrepreneurial startups. Recent literature has theoretically modelled the pre-ordering scheme under crowdfunding in the context where entrepreneurs price discriminate through charging crowdfunders a premium above that of retail consumers. However, more than 50% of total funds raised through Kickstarter, the leading reward-based crowdfunding platform, represent projects that offer a discount to early purchasers. We contribute to the literature by modelling pre-ordering using an advance purchase discount as a price discrimination device, while employing future retail price commitment. Moreover, we derive the entrepreneur's optimal choice between opting for crowdfunding and spot selling for two scenarios: unconstrained and financially constrained entrepreneur. In the latter the entrepreneur is essentially choosing between consumer vs investor financing. We further develop our analysis by discussing welfare and public policy implications.*

3. *The effect of collectivistic framing in crowdfunding success* (Daniela Defazio, **Chiara Franzoni**, Cristina Rossi-Lamastra)

Discussant: **Ahmed Sewaid**

Abstract. *We investigate how collectivism shapes the success of crowdfunding projects and highlight the mechanisms that reinforce or weaken its effectiveness. To this end, we use the theoretical lens of framing theory and associate the display of a collectivistic orientation (identified by specific linguistic cues in the textual description of the project) with a collectivistic framing. Moving from these premises, we explore: a) how different levels of collectivism (i.e., the relative prominence of a collectivistic orientation within the text) and b) its interplay with distinctive features of online markets, namely the information structure and the amount of competing information (number of other projects posted in the same category and time-window) on the crowdfunding platform (CFPs) contribute to fundraising success. In the empirical part of the paper, we use a content analysis methodology to assess the collectivistic orientation of a sample of projects 8,631 posted on Kickstarter during one year from July 1st, 2016 to June 30th, 2017 in the categories of technology and design. The effect of collectivistic framing on success is then estimated through a Logit specification.*

The results indicate that modest levels of collectivism are associated with greater probability of success, whilst high levels of collectivism, are associated with fewer probability of success. Collectivism has also a negative effect on the likelihood of success when collectivistic cues are displayed in a prominent position, i.e. in title and blurb. Finally, we find that the amount of information on the CFP positively moderates the negative effect of collectivism on success, so that for increasing amounts of information the frame of reference loose it relevance. and having or not a collectivistic fame makes no difference on the likelihood of success.

Parallel session E1 "RESEARCH ISSUES ON CROWDFUNDING (2)"

Chair: **Armin Schwienbacher**

1. *The impact of narrative style and entrepreneur's experience in crowdfunding campaigns* (**Riccardo Maiolini**, Francesco Cappa, Maria Isabella Leone, Michele Pinelli)

Discussant: **Truls Erikson**

Abstract. *As the caption of the entrepreneurial project is the main source of information for funders in crowdfunding campaigns, appropriate narrative styles may rouse interest in the crowd and ultimately affect the amount of funding obtained by entrepreneurs. In this study, we empirically assess the effect of two opposite narrative styles on the success of these campaigns. Based on a sample of about 6,000 projects, we show that the use of the narrative emphasizing the achievement of "results" achieved positively affects the fundraising outcome, more than communicating the "journey" the project is going to undertake. Interestingly, this effect is reversed in case of serial entrepreneurs, indicating that experience may leverage the latter narrative emphasizing the potential traits of the vision of the project to attract backer's funding rather than the former conveying updates on certain milestones achieved, as the experience itself represents a signal of trustworthiness in the project realization*.

2. *The role of trust in crowdfunding* (**Truls Erikson**, Raissa Pershina)

Discussant: **Silvio Vismara**

Abstract. *Crowdfunding has become a viable alternative way of fundraising for new ventures. In this study, we investigate the role of "generalized" and "personalized" trust by empirically testing 13,055 technology projects at Kickstarter. Our initial analysis supports the conjecture that "generalized" trust between the project backers and creators relates positively to performance of the fundraising process, and that "personalized" trust (the trustworthiness of the creator) matters. In our paper, personalized trust is understood as confidence and honesty. Project proposals demonstrating confidence have a high likelihood of receiving funding, whereas those that are too disclosing are penalized for that. Implications for theory and practice are discussed.*

3. *Does equity crowdfunding democratize entrepreneurial finance?* (Douglas Cumming, Michele Meoli, **Silvio Vismara**)

Discussant: **Ed Saiedi**

Abstract. *Policy-makers expect equity crowdfunding to democratize entrepreneurial finance, by providing access to funding to underrepresented groups of potential entrepreneurs. This paper investigates whether gender, age, ethnicity and geography affect the choice of equity crowdfunding offerings vs initial public offerings on traditional stock markets and whether these characteristics increase the likelihood of a successful offering. Using 167 equity offerings in Crowdcube and 99 equity offerings on London's Alternative Investment Market raising between 300,000 £ and 5 £m,*

we find that companies with younger TMT members are both more likely to launch equity crowdfunding offerings than IPOs, and have higher chances to successfully complete an equity crowdfunding offering. Remotely located companies are more likely to launch equity crowdfunding offerings than IPOs and have higher chances to successfully complete an equity crowdfunding offering. On the contrary, female entrepreneurs do not have higher chances to raise fund in equity crowdfunding. Minority entrepreneurs do not have higher chances of successfully raising capital but attract a higher number of investors.

Parallel session E2 "CORPORATE VENTURE CAPITAL"

Chair: **Luisa Alemany**

1. *Technology disclosure and corporate venture capital investments* (**Ali Mohammadi**, Pooyan Khashabi)

Discussant: **Hannes Maxin**

Abstract. *We investigate how technology disclosure drives the formation of investment relations between startup and corporate venture capitals (CVC). On the one hand, technology disclosure enables CVCs to evaluate startups better, make less risky investment decisions and thus, increases the likelihood of investment relations. On the other hand, such disclosure may satisfy the technology-acquisition objectives of CVCs, reducing CVCs willingness to form an investment relation with startup. We exploit the American Inventor's Protection Act as an exogenous change to high-tech startups' technology disclosure through their patent documents. The results show that technology disclosure increases the likelihood of an investments relation between startups and CVCs. The effect is stronger in environments with more information constraints between startups and CVC.*

2. *The corporate venture capital exit decision* (**Hannes Maxin**)

Discussant: **Benjamin Le Pendeven**

Abstract. *This paper investigates an entrepreneur who decides whether to obtain funds from an independent venture capital firm (IVC) or a corporate venture capital firm (CVC) to develop an innovative product. In case of success, the entrepreneur enters a market and competes with an incumbent. The CVC is a subsidiary of an input producer.*
This input will be required by both the entrepreneur and the incumbent to produce their products. I analyze three different exit routes: (1) IPO, (2) acquisition by the incumbent and (3) acquisition by the input producer. I show that the CVC does not sell the venture to its parental company due to a loss of demand for the input good. Moreover, I find that the IVC exits high innovative ventures more likely via an IPO, in comparison with the CVC. The analysis generates a number of empirical implications for the difference between IVCs and CVCs and the link between CVCs and the acquisition decision of their parental companies.

LIST OF CONTRIBUTORS

ED = Editor C = Chairman D = Discussant P = Presenter

Surname, Name	Affiliation	Sessions
Alemany, Luisa	Esade Business School, SPAIN	D1(P,D), E2(C)
Alperovych, Yan	EMLYON Business School, FRANCE	A4(C,D)
Andries, Petra	Ghent University, BELGIUM	B4(D)
Andrieu, Guillaume	Montpellier Business School, FRANCE	D2(P)
Bertoni, Fabio	EMLYON Business School, FRANCE	C4(C), D3(P)
Blaseg, Daniel	Goethe-Universität Frankfurt, GERMANY	C1(D)
Bollazzi, Francesco	LIUC Università Cattaneo, ITALY	C2(P)
Bonini, Stefano	Stevens Institute of Technology, USA	B4(C,D)
Brinster, Leonard	University of Hohenheim, GERMANY	C2(P,D)
Butticè, Vincenzo	Politecnico di Milano, ITALY	C4(P,D), D3(P)
Capizzi, Vincenzo	Università del Piemonte Orientale, ITALY	A3(D), B1(C)
Cappa, Francesco	LUISS, ITALY	B3(P,D),C3(P)
Cerchiello, Paola	Università di Pavia, ITALY	C3(D,P)
Cohen, Laurence	Université Jean Moulin Lyon3, FRANCE	A1(P), B1(D)
Cole, Rebel	Florida Atlantic University, USA	A3(P,D)
Colombo, Massimo G.	Politecnico di Milano, ITALY	ED, A1(C)
Croce, Annalisa	Politecnico di Milano, ITALY	C1(D)
Di Pietro, Francesca	LUISS, ITALY	B3(P,D)
Duca, John	Oberlin College and Federal Reserve Bank of Dallas, USA	A3(P,D)
Dushnitsky, Gary	London Business School, UK	D2(C), C1(P)
Erikson, Truls	University of Oslo, NORWAY	E1(P,D)
Forbes, Daniel	University of Minnesota, USA	C2(D)
Franzoni, Chiara	Politecnico di Milano, ITALY	B2(P), D4(P)
Furnari, Salvatore Luciano	LUISS, ITALY	A2(P,D)
Galloppo, Giuseppe	Università della Tuscia, ITALY	A1(P,D)
Gervasoni, Anna	LIUC Università Cattaneo, ITALY	C2(C)
Girard, Carine	Audencia Business School, FRANCE	A2(D,P)
Giudici, Giancarlo	Politecnico di Milano, ITALY	ED
Grassi, Laura	Politecnico di Milano, ITALY	C3(P), D4(D)
Groh, Alexander	EMLYON Business School, FRANCE	A3(C), B1(P)
Guerini, Massimiliano	Politecnico di Milano, ITALY	A1(D), C1(P)
Hammer, Benjamin	HHL Leipzig Graduate School of Management, GERMANY	B4(P,D)
Hellmann, Thomas	Oxford University, UK	D3(C)
Hogan, Teresa	DCU Business School, IRELAND	D1(P,D)

Ilhantekin, Erkan	Politecnico di Milano, ITALY	A4(D)
Imhof, Zoë	Vlerick Business School, BELGIUM	C4(P,D)
Janson, Nathalie	Neoma Business School, FRANCE	C3(P,D)
Le Pendeven, Benjamin	Audencia Business School, FRANCE	E2(D)
Liang, Claire Y.C.	Southern Illinois University, USA	D2(D)
Ludat, Julian	TUM School of Management, GERMANY	C4(D,P)
Maiolini, Riccardo	John Cabot University, ITALY	D3(D), E1(P)
Manigart, Sophie	Vlerick Business School and Ghent University, BELGIUM	B4(P), C3(C)
Martì Pellòn, Josè	Universidad Complutense de Madrid, SPAIN	A1(D,P), B2(C)
Martinez, Carlos R.	University of St. Gallen, SWITZERLAND	A4(P,D)
Maxin, Hannes	Leibniz University of Hannover, GERMANY	E2(P,D)
Menon, Carlo	OECD	B1(P)
Mohammadi, Ali	KTH Royal Institute of Technology, SWEDEN	D4(P), E2(P)
Nanda, Vikram	University of Texas at Dallas, USA	C2(P,D)
Pedrazzoli, Alessia	Università di Modena e Reggio Emilia, ITALY	B2(P,D)
Piva, Evila	Politecnico di Milano, ITALY	B2(D), D1(C)
Przybyszewski, Jacek	Copenhagen Business School, DENMARK	D3(D)
Quas, Anita	EMLYON Business School, FRANCE	
Ramesh, Kuruva	Indian Institute of Technology Madras, INDIA	A4(P)
Retterath, Andre	Technical University of Munich, GERMANY	B4(P,D)
Richstein, Robert	Heinrich Heine University Düsseldorf, GERMANY	B1(P)
Rossi Lamastra, Cristina	Politecnico di Milano, ITALY	B3(C),D4(D)
Saiedi, Ed	KTH Royal Institute of Technology, SWEDEN	D4(P), E1(D)
Sannajust, Aurélie	University of Saint-Etienne, FRANCE	B2(P,D), D4(C)
Schwienbacher, Armin	SKEMA Business School, FRANCE	E1(C)
Sewaid, Ahmed	Universitat Autonoma de Barcelona, SPAIN	D4(P,D)
Soggia, Giovanni	Banca d'Italia, ITALY	A3(P)
Standaert, Thomas	Ghent University, BELGIUM	B1(P,D)
Stroe, Silvia	Politecnico di Milano, ITALY	B3(P,D)
Tatomir, Simon	Technische Universität Darmstadt, GERMANY	A1(P)
Tenca, Francesca	Politecnico di Milano, ITALY	
Toma, Anca Mirela	Università di Pavia, ITALY	C3(D)
Toschi, Laura	Università di Bologna, ITALY	D1(P,D)
Tykvova, Tereza	University of Hohenheim, GERMANY	C2(P,D)
Ughetto, Elisa	Politecnico di Torino, ITALY	D3(P,D)
van den Heuvel, Matthias	École polytechnique fédérale de Lausanne, SWITZERLAND	B1(D)
Vanacker, Tom	Ghent University, BELGIUM	A2(D), C1(C)
Vaznyte, Egle	Ghent University, BELGIUM	B3(D,P)
Veer, Theresa	Eberhard-Karls Universität Tübingen, GERMANY	A4(P), E2(D)
Vismara, Silvio	Università di Bergamo, ITALY	A2(C), E1(P,D)

Walthoff-Borm, Xavier	Ghent University, BELGIUM	B2(D)
Wang, Cong (Roman)	Emory University, USA	B4(P)
Wirtz, Peter	Université Jean Moulin Lyon 3, FRANCE	A1(P,D), B2(P)
Xiao, Li	Lancaster University Management School, UK	C4(P,D)
Zhang, Yuejia	University of Auckland, NEW ZEALAND	A4(D,P)

FULL PAPERS

MARKET ANALYSIS, ECONOMICS AND SUCCESS DRIVERS OF EQUITY CROWDFUNDING

SALVATORE LUCIANO FURNARI
Research Assistant of European Business Law, LUISS Guido Carli University
Freshfields Bruckhaus Deringer, Financial Services Department

Abstract

The main scope of this paper is to identify which are the determinants on equity crowdfunding development from two different points of view: (i) the one of the market; and (ii) the investor's one. In order do so, after a brief introduction of equity crowdfunding and of its more relevant dynamics, the first part of this paper deals with factors determining equity crowdfunding market development while the second identifies the drivers that attracts investors participation, testing its theoretical findings with a case study on Italian equity crowdfunding platform.

1. Introduction

Crowdfunding is "*the practice of funding a project or a venture by raising many small amounts of money from a large number of people, typically via the Internet*". [1] It is a particular form of crowdsourcing in which the crowd participate mainly giving money for the development of ideas or entrepreneurial projects. [2]

Crowdfunding involves the participation of three subjects. The first is the creator of the crowdfunding campaign seeks funds to develop a project. He publishes his idea on a crowdfunding platforms, the second subject involved. Using the Internet, the platform gives the possibility to reach a huge amount of people, the third, who can send money to help the development of the presented project.

Differently from other crowdfunding model (such as donation, reward and lending crowdfunding), equity crowdfunding [3] - also referred in the literature as crowdinvesting [4], investment-based crowdfunding [5] or securities crowdfunding [6] - is the only crowdfunding scheme that lets contributors became shareholders of the company they are giving money to. The sum contributed will *de facto* represent their share of capital conferred to the issuers' companies. [7]

The recent success of equity crowdfunding is linked with the disintermediation of the relationship between issuer and investors. This fact brings to the table a lot of advantages for both, together with a considerable number of risks. Indeed, involving usually the issuance of startups' shares, the possibility to get very high financial returns is the first advantage that could be acquired by each investor. [8] On the other side of the mirror, for the issuer this means access to lower cost of capital if compared with the ones supplied by banks or venture capital. [9] Contrary to other forms of financing, with equity crowdfunding entrepreneurs do not need to give investors control rights nor to pay them interests. [10]

But one the biggest "social" benefits of equity crowdfunding is the possibility given by the Internet to reach by a wide public, no matter in which part of the world the project is created. [11] This means that the issuer can use the famous "*wisdom of the crowd*" (SUROWIECKI, 2005) [12] to solve most of the problem that usually affect a startup project (such as market validation, pricing difficulties, marketing) in this way

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[1] The Oxford Dictionary of Modern English, 2014.
[2] WILLFORT R. and WEBER C. (2016), p.214.
[3] *See* PIATTELLI U. (2013), p. 14.
[4] This terms is used by KLÖHN and HORNUF in KLÖHN, L. and HORNUF, L. (2012), p.237- 266 and by HORNUF and SCHWIENBACHER, in HORNUF, L. and SCHWIENBACHER, A. (2014)
[5] The Financial Conduct Authority (FCA) and the European Security and Market Authority used this term in "FCA Consultation Paper CP13/13 'The FCA's regulatory approach to crowdfunding (and similar activities)'" and "European Securities and Markets Authority 'Opinion Investment-based crowdfunding'."
[6] KNIGHT, LEO and OHMER used this term in KNIGHT, T.B., LEO, H. and OHMER, A. (2012), p.135-153.
[7] Usually the newcomer investor is not considered always as a fully-fledged partner, since the company could establish some limitation in the participation acquired such as no voting rights.
[8] For instance, investing in Uber granted a returns two thousand times bigger than the first amount invested according to GRIFFITH E. (2014). Instead, in more general terms, investment in startups has been estimated in giving a returns that is 2.5 times bigger than the initial investment. For more information *see* WILTBANK R. (2012)
[9] *See* AGRAWAL, A. K., CATALINI, C. and GOLDFARB, A. (2013), p.10.
[10] *See* VALANCIENE L., JEGELEVICIUTE S. (2013)
[11] Other advantages correlated with the use of equity crowdfunding are the possibility to bundle the sale of equity with other valued goods, such as discounts for future shareholders or the possibility to be the first to have a prototype of the product. *See* VALANCIENE L., JEGELEVICIUTE S. (2013), p. 12
[12] "The wisdom of the crowd" (or intelligence of the crowd) is a sociological theory according to which a large group's aggregated answers to questions involving quantity estimation, general world knowledge and spatial reasoning has generally been found to be as good as, and often better than, the answer given by any of the individuals within the group.[Wikipedia]. See also WILLFORT R. and WEBER C. (2016), p. 215 and NASRABADI A. G. (2015)

gaining the possibility to test the potential success of a product and reducing the risk of failure. But equity crowdfunding is also risky innovative financing instrument for both, contributors and promoters. Principal equity crowdfunding risk for investors are: fraud, because in the Internet it is easy to use false information to create a fake crowdfunding campaign [13]; failure of the issuer, being them usually "just" startup [14]; and market illiquidity, given the no-existence of consistent secondary market for the share acquired. However, some risks exist also for the issuer. These are related to: the publication of the idea on the Internet, that may cause the idea being stolen or the reputation of the promoter be harmed; and the increasing of administrative costs to maintain the relationship with the crowd of investors [15]

2. Market analysis and factors influencing the development of equity crowdfunding market

In order to identify which drivers favour or obstacle equity crowdfunding market development it is necessary to report the available market data, with particular reference to US and UK in which equity crowdfunding is already well developed, together with the performance registered by Italian market in which this instrument is still in its developing phase.

2.1. Market Analysis: the equity crowdfunding industry

Equity crowdfunding market, together with the global alternative finance market, had an incredible growth in the last 3-4 years, reaching some form of stability only from 2015. [16]

Notwithstanding the UK crowdfunding market volume (collecting € 5,6 billion in 2016), represents only the 15% [17] of the amount collected in US in the same year ($ 35,5 billion), proportionally, equity crowdfunding has more relevance in the UK than in the US. This is confirmed by the fact that, in 2016, as shown in Figure 1 and 2: UK equity crowdfunding market, collecting $ 401,2 million, represented in the

[13] According to AGRAWAL et al. (2013), while projecting a crowdfunding campaign "it is relatively easy to use false information and craft fraudulent pages". This opportunity makes crowdfunding an appealing target for professional criminals. This is truer because usually retail investors do not make any due diligence, being each single contribution of relative small amount and thanks to the high possibility of free-ride on investment decision of others. For further information, *see* also CORNER and LUZAR (2014)

[14] However, thanks to the so-called "wisdom of the crowd", the number of startups that fail after concluding a successful crowdfunding campaign are few. Data confirm this assumption. A research made by AltFi and reported by the Financial Times, states that "only" the 20% on the companies using equity crowdfunding failed. This is a big result, considering that the actual rate of failure for startups is between 80% and 90% after the first two years from their incorporation. BARRETT C. and ROVNICK N. (2015)

[15] Usually the components of these costs are linked with the management of the campaign itself, that includes the necessary interaction with the crowd that is recommended before, during and after the campaign. Maintaining the relation with the crowd and looking for its support are some of them. Moreover, as reported by AGRAWAL et al. (2013), just the simple action of sending rewards, making updates and answering the questions of the community are activities that are really time consuming and that uses important energy that should be dedicated to run the business. AGRAWAL, et al. (2013) report that in most cases the team became so overloaded with activities relating the managing of the campaigns that they have little time to run the company. *See* AGRAWAL, et al. (2013) p. 17.

[16] Indeed, the European alternative finance market, passed from € 1.27 billion collected in 2013 to € 5.43 billion in 2015, reporting an incredible growth of 327% from 2013 to 2015. Only from 2015 to 2016 the growth rate decreased (only 41%), considering a total amount collected of € 7.671 billion in this year. American alternative finance industry is bigger than the European. However, with $ 4.46 billion collected in 2013 and $ 11.7 billion in 2014, its growth rate in this first year was similar to the European one (162%); collecting $ 28.7 billion in 2015, then its growth rate became higher (145%). However, the American increase of the last two years was lower. Indeed, collecting $ 36.5 billion in 2016, the measured growth rate was only of 27%, that is to say quite half than the European one that was of 41%. The United Kingdom is the undiscussed leader of European alternative finance market. Indeed, having collected € 4.4 billion in 2015 and € 5.6 billion in 2016, those amounts represents the 81% and the 72% respectively of all the European alternative finance market. A similar predominance could be observed in America, where the US leads this market, having collected $ 28.5 billion in 2015 and $ 35.5 billion in 2016, that is to say more than the 99% and 97% respectively of the American alternative finance market volume. For more information *see* CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2016) and CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017b)

[17] The comparison has been made converting the UK collected amount in dollars at the exchange rate (0,94 $/€) of 31/12/2016.

same year only the 70% of the US one, which volume was $ 569.1 million; [18] equity crowdfunding in the US, represented just the 1,6% of the total US alternative finance market against the 5,94% of the UK one; UK equity crowdfunding growth rate, between 2015 and 2016, was higher than in the US one, having the last a negative value of -5%, while the former a positive one of 10%. [19]

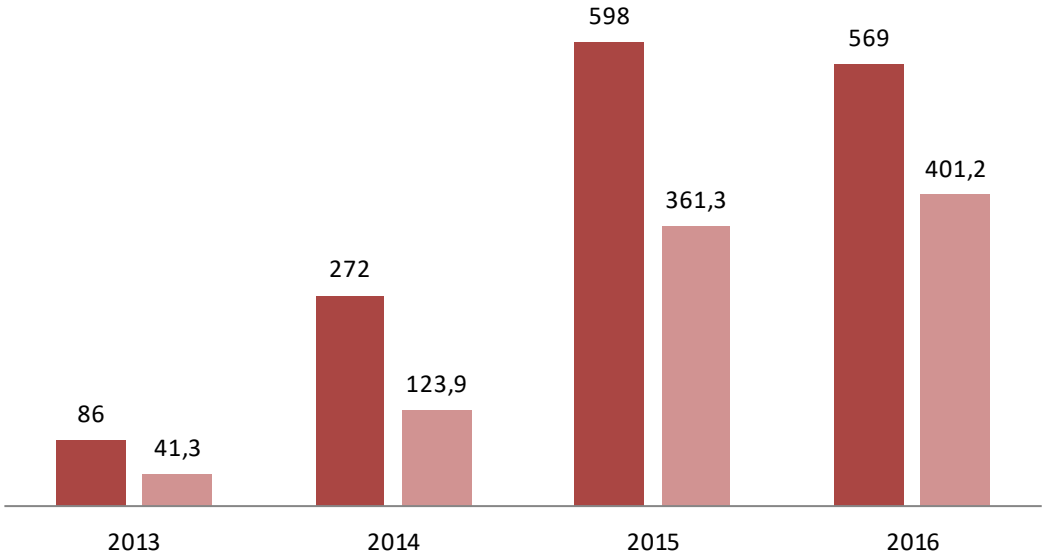


Figure 1 – UK(right) vs USA(left) equity crowdfunding market volume ($ million).
Source: Adapted from Cambridge Centre for Alternative Finance (2017) and Cambridge Centre for Alternative Finance (2017b)

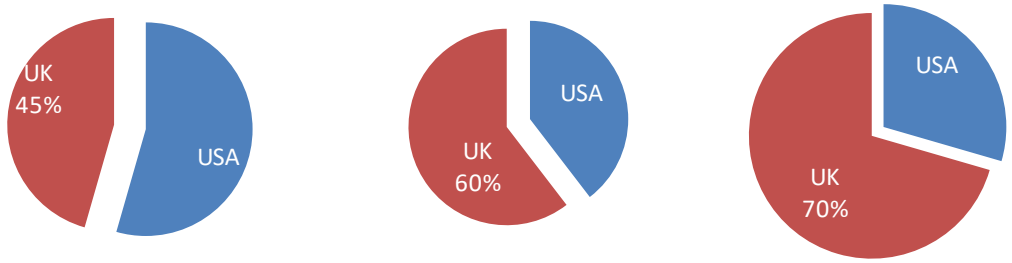


Figure 2 – Percentage of UK equity crowdfunding market volume in relation to the US one ($ million) from 2014- 2016.
Source: Adapted from Cambridge Centre for Alternative Finance (2017) and Cambridge Centre for Alternative Finance (2017b)

However, the most important data that need be highlighted from the data reported, is the fact that after a rapid growth in previous years, from 2015 to 2016 the growing rate of equity crowdfunding market in US and in UK is now quite stable. This clearly means that in those country equity crowdfunding ended its developing phase, reaching now a form of stability.

[18] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017), p. 12
[19] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017b), p. 30 and CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017) p. 59. To make a comparison between the two amounts, as the one presented in Figure 1, the GBP/USD exchange rate adopted was the average from 2013 to 2016. Indeed, the representation would be distorted if the exchange rate of each year would have been considered, because of a strong depreciation of GBP from 2015 to 2016, the £/$ exchange rate passed from 1,48 £/$ to 1,23 £/$.

ICT is the top sectors funded via equity crowdfunding both in UK and in the US. [20] It is followed by Community and Social Enterprise in the UK while by Internet ad E-commerce in the US. Finance is the third sector for financing through equity crowdfunding in both countries.

In terms of market concentration, equity crowdfunding platform market is an oligopoly with only few companies controlling a wide part of the market. For instance, in UK the most famous equity crowdfunding platform is Crowdcube, that is also one of the most successful equity crowdfunding platform in the world, controlling the 48% of UK equity crowdfunding market, followed by Seedrs with the 26% and SyndacateRoom with the 18%. [21]

In US, instead, it is possible to find an higher number of platforms than in UK. [22] If concentration is calculated on the base of the market share owned by the three bigger platforms, US concentration is 68% against the 92% of the UK one. The most famous US equity crowdfunding platforms, also in terms of money collected, are EquityNet and CircleUp, controlling respectively the 40% and the 15% of the market, followed by Crowdfunder and Seedinvest, controlling both the 13% of the market.

As far as Italy is concerned, similar result cannot be observed. [23] Indeed, notwithstanding the possibility to study real-time data, [24] Italy does not occupy a really important position among other countries in terms of market volume. [25]

However, in 2017 Italian equity crowdfunding market volume have seen a sensible growth, passing from the € 1,766 million collected in 2015, the € 4,363 million collected in 2016, to the € 11,788 million collected in 2017 (*see* Figure 3 below).

[20] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017) p. 17 and CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017b) p. 44

[21] Information available from the databank of *www.beauhurst.com*

[22] This could be the result of at least two factors: the less US stringent authorization process, if compared with the UK one; and the higher market volume that gives the possibility to more operators to enter the market.

[23] In general, equity crowdfunding represents an important percentage of Italian alternative finance market. In 2017, it represented the 27,5 % of Italian alternative finance market of that year, collecting € 11.9 million only in 2017 from the € 4,36 million of the previous year. Considering the total amount of money that the Italy alternative finance market collected until 2017 (that is near €133 million, of which €41 million collected only in 2017), equity crowdfunding represents the 14,2% of crowdfunding industry. Data provided by Crowdfunding Report and available at: http://www.crowdfundingreport.it/#fourth [Accessed: 15th December 2017]

[24] Data provided by OSSERVATORIO SUL CROWDFUNDING – POLITECNICO DI MILANO. Databank available at: http://www.osservatoriocrowdinvesting.it/ [Accessed: 15th December 2017]

[25] As will be argue in the following paragraphs, the reason of the low development of this market it is connected with the fact that Italy has been the first country in the world issuing a specific regulation addressing retail investors of equity crowdfunding.

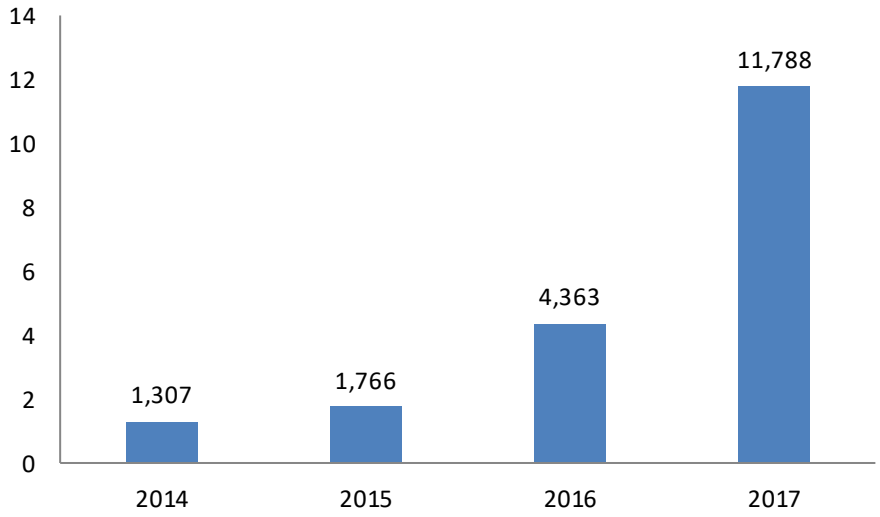


Figure 3: Italian equity crowdfunding volume 2014-2017 (€ million)
Source: CrowdfundingBuzz.it

Recently, the amount of money raised through equity crowdfunding campaigns in Italy have sensibly increased. Indeed, its growth rate was around 150% from 2015 to 2016 and around 170% from 2016 to 2017. It is interesting to observe that this is similar to the 150-160% growth rate find out in UK and in US from 2013 to 2014. This means that during 2017 something has been changed (or removed) in a way to let equity crowdfunding market develop. [26]

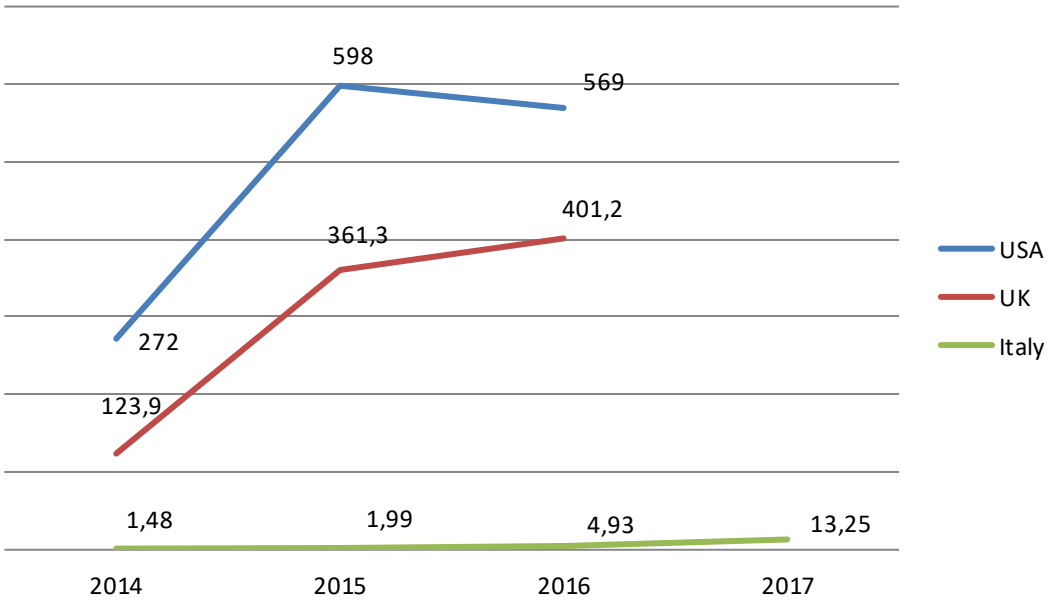


Figure 4 – Amount of money collected 2014-2016 ($ million). As far as the data of 2017 are not available for USA e UK, they are not be represented.

[26] As will be argued it is thanks to some *right* amendments in the equity crowdfunding legislation that this Italian market is starting to bloom.

Italy has in common with the UK and the US some of the top sectors funded via equity crowdfunding platforms. Indeed, considering the 106 companies that get founded via equity crowdfunding until the 30/06/2017, the most funded sectors from 2012 are the Sharing Economy and the Social Services sector, with 28 companies funded in total, of which 18 only in the previous year. ICT is the second most funded sector, with 25 funded companies, of which 15 only in the last year. The third is the sector for Professional Services, with 14 companies funded of which only 5 in the last year. [27]

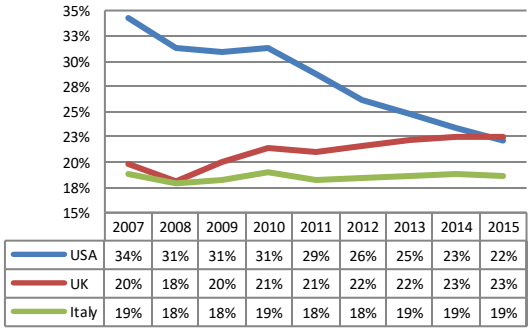
Finally, in terms of market concentration, Italian market is less concentrated than the UK one. Indeed, considering only the 14 most relevant platforms of the 22 authorized to operate in Italy, if they are classified on the base of amount of money collected, the first three platforms hold the 60% of the market volume, while all the other have to share the 40% of the market. This grade of concentration may suggest that in the next year smaller platforms may leave the market, so that also the Italian equity crowdfunding market will became an oligopoly as the UK one.

2.2 Success driver of equity crowdfunding market: Banking sector

The spread of the alternative finance market has been possible thanks to the fact that those instruments has been elected as the perfect source of funding for small and medium-sized enterprises (hereinafter SMEs). [28]

Indeed, immediately after the financial crisis of 2008, possibilities of receiving funds for SMEs from the traditional financial system (above all banks) drastically lowered. [29] Figure 5 shows how volume of outstanding loans dedicated to SMEs (calculated as percentage of total outstanding loans for enterprises) decreased in USA, UK and Italy after the financial crisis. In particular, the most important decrease could be observed in USA, where the considered percentage passed from the 34,3% of 2007 to the 22,1% of 2015.[30] But a reduction of the volume of loans dedicated to SMEs could be signalled also in Italy and in UK, where the reduction is more evident only analysing the growth rate of loans dedicated to SMEs from 2008 to 2015.

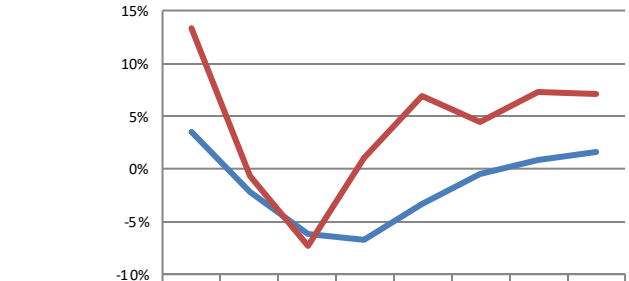
[27] OSSERVATORIO CROWDFUNDING – POLITECNICO DI MILANO (2017)
[28] HORNUF L. and SCHWIENBACHER A.(2017), p. 1. For instance, in 2016 in the UK, the 72% of all the alternative finance market funds was raised for startups and SMEs and, although the principal source of funding derived from debt-based models, equity crowdfunding provided still £371 million funding to 482 SMEs, representing the 5,94% of the total alternative finance volume. *See* CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017) p. 18
[29] ORGANIZATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT (2015)
[30] This data is consistent with the fact that the USA were the place in which the financial crisis exploded after Lehman Brothers bankruptcy.



	2007	2008	2009	2010	2011	2012	2013	2014	2015
USA	34%	31%	31%	31%	29%	26%	25%	23%	22%
UK	20%	18%	20%	21%	21%	22%	22%	23%	23%
Italy	19%	18%	18%	19%	18%	18%	19%	19%	19%

a) Share of SME outstanding loans (% of total outstanding business loans) 2007-2015

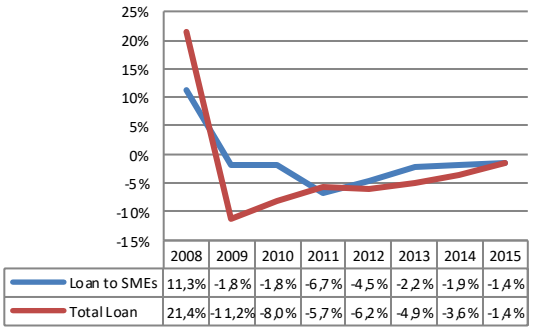
Source: Adapted from www.stats.oecd.org/



	2008	2009	2010	2011	2012	2013	2014	2015
Loan to SMEs	3,5%	-2,3%	-6,2%	-6,7%	-3,3%	-0,5%	0,9%	1,5%
Total Loan	13,3%	-0,7%	-7,3%	1,0%	7,0%	4,5%	7,3%	7,0%

b) Evolution of USA bank loan growth rate 2007-2015

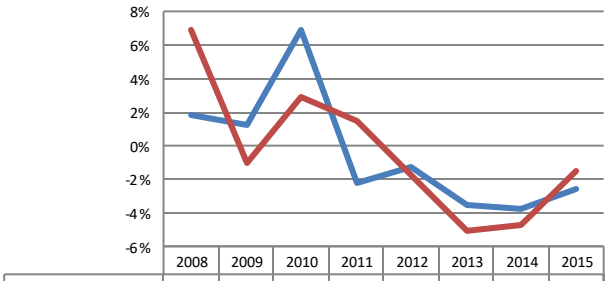
Source: Adapted from www.stats.oecd.org/



	2008	2009	2010	2011	2012	2013	2014	2015
Loan to SMEs	11,3%	-1,8%	-1,8%	-6,7%	-4,5%	-2,2%	-1,9%	-1,4%
Total Loan	21,4%	-11,2%	-8,0%	-5,7%	-6,2%	-4,9%	-3,6%	-1,4%

c) Evolution of UK bank loan growth rate 2007-2015

Source: Adapted from www.stats.oecd.org/



	2008	2009	2010	2011	2012	2013	2014	2015
Loan to SMEs	1,8%	1,2%	6,9%	-2,3%	-1,2%	-3,5%	-3,8%	-2,5%
Total Loan	6,9%	-1,0%	3,0%	1,5%	-1,8%	-5,1%	-4,8%	-1,5%

d) Evolution of Italy bank loan growth rate 2007-2015

Source: Adapted from www.stats.oecd.org/

Figure 5 - Share of SME outstanding loans and evolution of bank loan growth rate (2007-2015)

Analyzing how growth rate of outstanding loan for SMEs changed in the mentioned period gives a more useful insight on the increasing difficulties for SMEs to get financed after the financial crisis. As shown in graphic b), c) and d) of Figure 5 in all the mentioned countries from 2008 the growth rate of loans issued for SMEs strongly decreased, becoming almost all negative. In USA, for instance, notwithstanding the fact that total loans growth rate started to increase in 2011, the percentage dedicated to SMEs remained negative for other three years before becoming positive only in 2014. In UK, instead, the growth rate from 2009 to 2015 is always negative, without differences between total loans and SMEs dedicated loans . A similar situation could be seen in Italy where growth rate of loans issued for SMEs started going down to became negative only after 2012, with important decrease around 3-4% from 2013 to 2014.

The reason for the reduction of the volume of loans issued in favour of SMEs, is linked with the more restrictive capital requirements that regulation imposed to banks after 2008. Indeed, new regulation forced a reconsideration of the risk that each credit institution could bear and, as a consequence, the reduction of loan conceded to risky business such as the one conducted by SMEs. [31]

[31] Indeed, in most cases, SMEs are companies that, in the better scenario, have a product without having yet a market for it; in the worst one, the product does not still exist. This creates diffidence in credit institutions because of the difficulties for them in making forecasts on futures cash flows of such enterprises and so, for the impossibilities to evaluate the potential to repay their debts. *See* ARMOUR et ENRIQUES (2017) and WILSON and TESTONI (2014). A relatively high risk of failure together with strong information asymmetry makes loans for SMEs riskier than

In the described scenario, SMEs were forced to look for "alternatives". One of them was represented by equity crowdfunding that supplied the financing role played by banks. In this way it was possible to use the Internet as a solution to fill the so created "*SMEs financing gap*". [32] Indeed, according to a famous study of the World Banks published in 2013, instead of having for each step of firm's cycle a particular form of finance available, SMEs suffer of a lack of financing instruments in a specific stage before the "maturity" of their life cycle (*see* Figure 6). [33] The needs of high amount of capital to develop the projects together with lack of track records or assets leave a company, between the inception and the maturity stages, without any possibility to access traditional financing instruments to develop its business. It is a phase in which *nobody* is available to finance SMEs, creating this funding gap. [34]

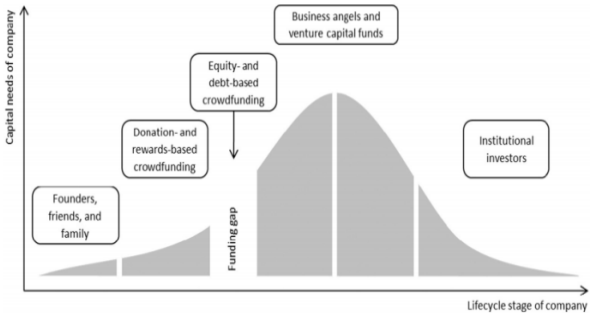
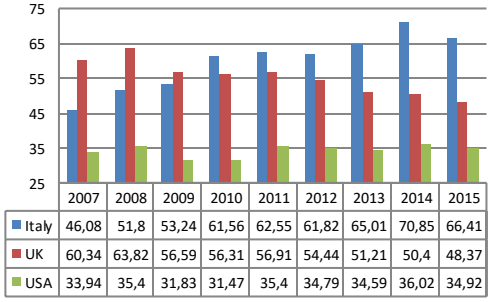


Figure 6 - SMEs life cycle and funding gap
Source: LUKKARINEN A., et al., (2016)



	2007	2008	2009	2010	2011	2012	2013	2014	2015
Italy	46,08	51,8	53,24	61,56	62,55	61,82	65,01	70,85	66,41
UK	60,34	63,82	56,59	56,31	56,91	54,44	51,21	50,4	48,37
USA	33,94	35,4	31,83	31,47	35,4	34,79	34,59	36,02	34,92

Figure 7 – Bank concentration, in terms of assets of three largest commercial banks as a share of total commercial banking assets (%)
Source: Adapted from http://databank.worldbank.org

In the absence of traditional financing instruments, equity crowdfunding, among other instruments belonging to alternative finance category, has been recognized as an useful financing alternative. Indeed, facilitating the meeting of people that have money to invest with people who need it to develop their entrepreneurial idea, [35] Internet creates the fundamental connection, solving an intermediary problem that before neither banks nor venture capitalists could solve in its stead.

This means that equity crowdfunding occupies a position in the market for firm financing where there is no – or at least little – presence of traditional financing forms. The demonstration of the aforementioned assumption could be observed comparing data from 2013 to 2015 on growth rate of outstanding loan for SMEs (*see* above Figures 5) with the data of the same period regarding the growth rate of equity crowdfunding volume in UK and in US. As the volume of loans available for SMEs decreased, equity crowdfunding market volume increased at rate that was near 876% for UK and 595%

loans issued to families or to big companies. To respect capital requirement imposed by new regulation, banks were impeded by issuing loans to whom cannot demonstrate the capacity to repay their debt.
[32] OECD recognizes the need to "broaden the range of financing instruments available to SMEs and entrepreneurs" and included crowdfunding in the list of those instruments. *See* OECD (2015)
[33] WORLD BANK (2013)
[34] Therefore, during the first step, the so called inception stage, the company is created counting on personal funds or in the ones of family and friends. Only when company starts selling the produced product or service and so, only when track record is available or there are enough assets to guarantee for the loan received, the access to traditional external form of finance is possible. WORLD BANK (2013) p. 17
[35] BRADFORD, S. C. (2012), p 101

for USA in the same period. [36] A similar growth rate, around 300%, could be reported for Italy although its equity crowdfunding market was still too small in terms of volume to be significant.

This would suggest that the lower is the supply of loan from the banking sector in the market of that country, the higher is the chance that a SMEs will look for equity crowdfunding to finance its entrepreneurial project. [37]

Another way to demonstrate the above mentioned statement on the relation between banking sector and equity crowdfunding development is to consider data on banking sector concentration in US, UK and Italy. [38] Figure 7, indeed, shows important differences between those countries. In Italy, after 2009 banking sector concentration increased, passing from 46% of 2009 to 66% of 2015. The opposite happens in UK, where, after the financial crisis, banking sector concentration passed from 60% of 2007 to 48% of 2015. In USA, after a little reduction between 2009 and 2010, banking sector concentration remained very low, being stable around the 30-35%.

If the reported data are considered together with equity crowdfunding volumes of the analysed country, it is possible to observe an inverse correlation between banking sector concentration and equity crowdfunding market volume. Countries with lower banking sector concentration or where concentration decreased after 2008, developed bigger equity crowdfunding market than other where banking concentration increased. [39] In this way, it could be also explained why, in all its aspects, Italian equity crowdfunding development was so slow compared with the other countries. Indeed, the increase of banks concentration after 2008 slowed companies needs or possibility to access alternative source of funding. [40]

Therefore, it possible to draw two important conclusions. The first is that equity crowdfunding volume growth rate may be related with volume of outstanding loan available for SMEs in this way: the less SMEs have access to "traditional" financing forms, the more they tend to look for alternatives such as equity crowdfunding. The second may be that concentration of banking industry is related with equity crowdfunding volumes. Indeed, in countries with lower banking concentration (e.g. UK and US), equity crowdfunding grew of higher volumes than in country with higher banking concentration (i.e. Italy). So, equity crowdfunding market development is deeply, but inversely, related to the development of the banking sector that country. [41]

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[36] Instead, from 2013 to 2015 the growing rate of the alternative finance market was, instead, near 381% in UK and 541% in USA.

[37] This assumption is coherent with the relation find out between equity crowdfunding development and traditional financing forms in the current literature. To be more precise, the current literature used to find a more negative relation between equity crowdfunding and the banking sector. For more information *see* PELIZZON L. et al. (2016) but also: RUBINTON B (2011), arguing crowdfunding will be an evolution for investment banking, given is theoretical superiority and being crowdfunding more efficient, scalable, wiser and risk distributing; HAAS et al. (2015), on how crowdfunding represents a disruptive innovation for the banking industry for its "modularization"; and SCHWIENBACHER (2016) on the relation between lending crowdfunding and the banking industry, concluding however that this area of research is still developing.

[38] Following the approach adopted by the WORLD BANK for each country, banking concentration has been measured as the assets owned by the three largest banks on the total banking assets.

[39] For instance, US, where banking concentration remained stable around 30-35%, developed an equity crowdfunding market that collected $ 1.525 million from 2013; UK, where the mentioned concentration was initially high but then decreased, collected $ 454 million from the same year; Italy, instead, where banking concentration was already high and then increased more, collected less than $ 15 million from the same year.

[40] Confirmation of this assumption could be find out in the fact that while in 2015 banking concentration in Italy decreased by 4% from the previous year, equity crowdfunding volume started to considerably increase, registering a 230% growth rate in the next year.

[41] This is also confirmed by a recent research conducted in the US by the CAMBRIDGE CENTER FOR ALTERNATIVE FINANCE (2017b) that could be interesting to report. An interviews to some alternative finance platforms that recently exited the market, reported that most of the exit decisions have been taken after that banks re-started the issuance of loans at the end of the financial crisis. This is a valid testimony of the existence of a strong competition between "alternative" and "traditional" financing actors. CAMBRIDGE CENTER FOR ALTERNATIVE FINANCE (2017b), p. 39

2.3 …Financial market and Financial literacy

Differences of equity crowdfunding markets may be explained considering differences in financial markets dimensions. To understand this statement it is sufficient to compare the most recent data available [42] from the World Bank database and from the Global Financial Development Report 2017/2018 of the WORLD BANK (2018) on the considered country regarding (i) their number of listed companies and (ii) their stock markets capitalization in terms of percentage of each country GDP, as Figures 8 and 9 reports below.

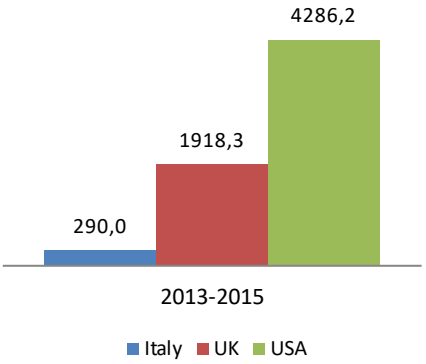


Figure 8 – Averaged number of listed companies from 2013-2015
Source: Adapted from http://databank.worldbank.org

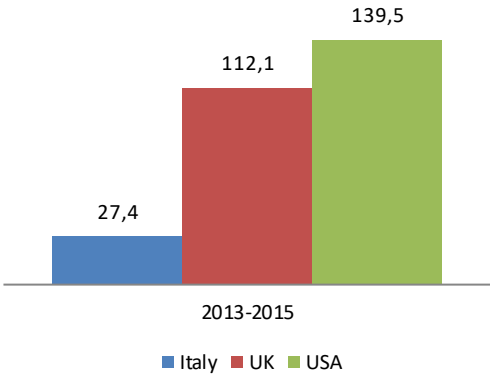


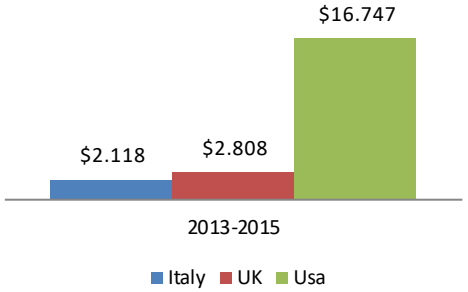
Figure 9 – Averaged stock market capitalization to GDP (%) from 2013-2015
Source: Adapted from World Bank (2018)

It possible to see that US financial market is the biggest, both in terms of number of listed companies (on average around 4.300 from 2013 to 2015) that in terms of stock market capitalization to GDP (on average around 139% on the same period). UK financial market is smaller than the American, although still important if UK's GDP is compared with the US one. Indeed, UK number of listed companies (on average around 1.900 from 2013 to 2015) is just less than half the number of the US and, specially, their averaged value of stocks traded to GDP differs only of less than 20%, being the UK around 112%. This results are impressive, considering that UK's GDP is 6 times smaller than the US, as reported in Figure 10 below. Contrary, notwithstanding the similarity between Italy and UK GDP (UK GDP is, on average, only the 30% higher than the Italian), their financial markets are deeply different. Indeed, the number of Italian listed companies, between 2013 and 2015 on average is 290, while the value of Italian stock market capitalization represent only the 27% of its GDP.

From the above description, it is difficult to not recognize some similarity with the respective volume of equity crowdfunding market. This difference, already described in detail, could be summarized in the Figure 11 below. The Figure show that UK equity crowdfunding market volume, on average, between 2013 and 2015 is only 4.5 times smaller than the US ($ 78 million of the UK, against the $ 318 million of

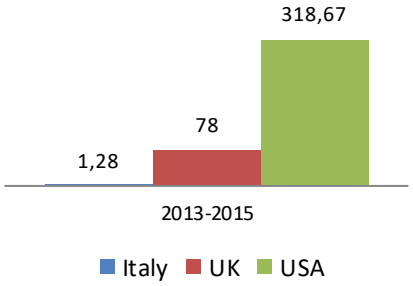
[42] The aim of the comparison is to study the volumes of the mentioned financial market, and not their evolution that, as the data show, it is quite stable in the long period. For more information, *see* WORLD BANK (2018).

the US). Contrary, the Italian, as for its financial market, remain the smallest in terms of volume, being its averaged value only $ 1.28 million on the same period.



a) Averaged UK, US and Italy GDP from 2013-2015 ($ billion)

Source: Adapted from http://databank.worldbank.org



b) Averaged UK, US and Italy equity crowdfunding volume from 2013-2015 ($ million)

Source: Adapted from www.worldbank.org/

Figure 10 - Averaged UK, US and Italy GDP ($ billion) and UK, US and Italy equity crowdfunding volume from 2013-2015 ($ million)

The relation between equity crowdfunding and financial market could be justified by the fact that also the former is a financing instrument based on the subscription and trading of companies' shares, to the point that equity crowdfunding could be fully considered as a premature IPO. It is evident that countries with bigger financial markets, such as USA and UK have also bigger equity crowdfunding market. Contrary, as it is the case for Italy, smaller financial markets may be related with smaller equity crowdfunding markets.

But different financial market developments could be observed also from an in investors point of view. Strictly linked with the level of development of financial markets and also with the one of equity crowdfunding, it is the different level of investor financial literacy [43] of those countries.

With this regard, in a research conducted by Standard & Poor [44] studying the level of financial literacy around the world, Italy is in a really distant position from the US and the UK. Indeed, as Figure 11 shows, in Italy only a percentage of adults that is comprised between 35-45% could be considered capable of taking well-informed financial decisions. For this fact, Italy has the lower value of financial literacy between all the major advanced economies (*see* Figure 11), [45] instead of USA and UK that could count on higher results, between 55-75%.

[43] Financial literacy could be defined as the possession of a set of knowledge that allows individual to make informed decisions with their financial resources. Those decisions involve the right way to generate, invest, spend, or save money.
[44] KLAPPER, A. et al. (2015)
[45] KLAPPER, A. et al. (2015), p. 8

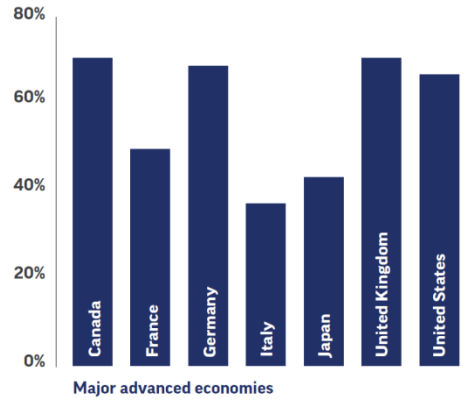


Figure 11 - Major advanced and emerging economies % of adults who are financially literate
Source: S&P Global FinLit Survey

Lack or low financial literacy level is an element with strong influence on equity crowdfunding development. Indeed, people who are financially literate have the ability to make informed financial choices regarding saving, investing, borrowing, and more. But without an understanding of basic financial concepts, people are not well equipped to make decisions related to financial management. [46] In country where more people understand basic concept of finance, financial instruments, such as share of SMEs or of startups, are more likely that would be subscribed also through equity crowdfunding. The higher is the number of people understanding basic financial concepts, the more are the ones that may decide to invest trough equity crowdfunding. On the other hand, in country in which either traditional financial instruments are not understood (and so not subscribed), it is less probable that a strong equity crowdfunding market will develop.

2.4 …Regulation

Evident is also the relationship between equity crowdfunding development and its regulation. To understand it a comparison of the rule related with equity crowdfunding in the above considered countries will follow.

2.4.1 Equity crowdfunding in the US: the rules that favour equity crowdfunding development.

The USA was the first country in the world to formally regulate crowdfunding with the Jumpstart Our Business Startups Act (*JOBS Act*) signed into law on 5 April 2012, dedicating its Title III entirely to equity crowdfunding. [47] Notwithstanding this, final rules implementing Title III where enacted only in

[46] KLAPPER, A. et al. (2015), p. 4
[47] Before the implementation of this title, some exemptions from the Securities and Exchange Commission (SEC) regular regime provided for IPOs already existed. The most famous was the so-called "Regulation A", a provision of federal law that permitted to raise up to $5 million in a public offering. Implementing Title IV of the JOBS Act, Regulation A has been replaced with the so-called Regulation A+ that let companies to raise up to $50 million in 12-months. There is no public restriction so anyone can invest with a limitation of the 10% of the greater of their annual income or net worth. Finally, also state compliance obligation has been removed. Unfortunately, this regulation was not incisive enough for launching equity crowdfunding, for at least two main reasons: first, it was not applicable to the "crowd" but only to accredited investors *"who can fend for themselves";* second, the $5 million exemption from the SEC's regime did not avoid state-by-state registration. In this way, equity crowdfunding was both personally and geographically limited or too expensive, involving compliance with each state "Blue Sky's Law". For further information, *see* ALMERICO K. (2015) SEC: Startups Can Now Raise $50 Million in 'Mini IPO'. *Entrepreneur*.com. [Online] 25th March.

2015 by the SEC [48] that finally permits retail (non-accredited) investors to buy shares of company through equity crowdfunding platforms. [49] The JOBS Act pre-empts state law: single states cannot add anything to this regulation. They only retain the right to enforce frauds or other violations of the state law, while no enforcement is permitted concerning violation of registration rules. In this way it could be possible to avoid territorial limitation, impeding each state to introduce different regulation on equity crowdfunding. As it will be understood in the comparison with the European situation, this provision is very important in not hurting the development of equity crowdfunding market.

With regard to regulation dedicated to the issuer, Title III of the JOBS Act permits the fund seeker to raise up no more than $1 million in a 12-month period. In addition, this regulation introduces two main obligations for the issuers: information disclosure and advertising limitations. [50] In this respect, one of the best aspect of US regulation is the "proportional disclosure approach". Apart from giving basic information about the company and potential risks of investing in those securities, the issuer has the power to decide the amount of the information that he wants to disclose on the base of the amount that it aspires on collecting. [51] Information to be published are so proportioned to the amount of money the issuer seeks, without imposing a *fixed* cost on him. In this way disclosure operations are not as expensive as the ones requested to conduct a traditional IPO and can be tailored on issuer financial needs and possibilities. [52]

With specific reference to investor protection, instead, in the US, this is realized limiting the maximum amount of money that each individual can invest in the issuer. This limitation is based on the investor's annual income. On the contrary, there is no restriction on the maximum number of investors that each issuer could attract through the crowdfunding campaign. It is possible to distinguish three categories of investors: (i) investors with an annual income lower than $100,000 can invest no more than 5% of their greater income, and so, at best $2,000; (ii) investors with an annual income higher than $100,000 can invest up to the 10% of their annual income; and (iii) investors who do not want to disclose their annual income have their investment limited to the sum of $2,000. [53]

Available at: http://www.entrepreneur.com/article/244278 [Accessed: 01st January 2017]. In addition, for more information about Old Regulation A *see* HORNUF, L., and SCHWIENBACHER A. (2015b)

[48] SEC press release available on its official website at: http://www.sec.gov/news/pressrelease/2015-249.html

[49] Before that, the Security Act provided an exemption only for particular investors, resembled in the group of the *famous* three "F"s: Family, Friends and Fools. With the terms "fools" are usually indicated business angels or other early adopters that believe at first sight in the start up's business idea. *See* SCHWARTZ, A., (2013)

[50] In relation to the first, issuers shall provide investors with the necessary information to appreciate risks and rewards of an investment. In doing so, an active role is played by the platform that has to provide potential investors and SEC with the information given by the issuer 21 days prior securities are ready to be offered through the portal. ELLENOFF S. D., ADLER J., SELENGUT D. and DEDENATO M. (2014)

[51] In particular, when the offering is (i) equal or below $100,000, the issuer shall provide the most recent income tax returns and financial statements which need to be certified by the principal issuer officers; (ii) between $100,000 and $500,000, a financial statement must be provided and reviewed by a public account; and (iii) more than $500,000, an audited financial statement is necessary which have been prepared and certified by a certified public accountant.

[52] Issuers are also required to disclose other information regarding the campaign and to publish periodical updates. In particular, this are limited to four information: (i) personal detail and names of directors, officers and investor owning more than 20% of the company; (ii) description of the current and the future business plan; (iii) disclosure of certain related party transactions; and (iv) description of the financial conditions of the issuer. But disclosure operations keep on also after the campaign is ended. Issuer shall annually file with the SEC and make available for investors financial statements and reports of the result of the crowdfunding operations. *See* SCHWARTZ A. (2013).

[53] *See* ALDERMAM P. (2015).

But US regulation contain also some principle limiting the secondary market of these securities [54], providing that investors are restricted from transferring their securities for one year. This provision, indeed, enhance risk of illiquidity. [55] Investors protection is, in addition, realized through imposition of some obligation to the platform. [56] Indeed, they are forced to make the investor answer a questionnaire in order to demonstrate their consciousness in relation to the risk that they are facing before they could access the portal and buy companies' shares. In addition, if the investors answer correctly to the questionnaire, and manage to complete the investment, the platform has to adopt a mechanism to grant them the possibility to withdraw their investment. In general terms, the aforesaid requirement has to be implemented together with another providing that the issuer cannot receive the proceeds of the offering until the target amount is reached or exceeded. These are all good rules enhancing investors protection without imposing high disclosure costs on the issuers. [57]

2.4.2 Equity crowdfunding in Europe: from the success of United Kingdom to Italian regulation.

2.4.2.1 Principal limitation of using equity crowdfunding in Europe

Differently from the US, in Europe each Member State has a different equity crowdfunding regulation. While traditional financing instruments are directly subject to important and harmonized rules at the European level (e.g. Capital Requirements or Prospectus Directives), instead, a dedicated and harmonized set of rules for equity crowdfunding does not still exist. This implies problems of non-harmonization between each Member States and so the imposition of territorial limitation to equity crowdfunding usage across Europe, with clear limitation for its development.

The principal European Directives that directly affect potential equity crowdfunding development [58] are Prospectus Directive [59] and MiFID II. [60]

The Prospectus Directive regulates the *soliciting of investment* and *the act of public offering* with the main purpose of harmonizing the rules on the information to be contained in the prospectus that companies have to publish when they want to offer securities to the public in the European Union. [61] The

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[54] *See* ELLENOFF S. D., ADLER J., SELENGUT D. and DEDENATO M. (2014).

[55] This rule is not valid only in case of transfer to: (i) the issuer, (ii) an accredited investor, (iii) an offering registered with the SEC and (iv) an investor's family member. Because of the reduced number of shares issued and these transfer limitation, some authors argue that a secondary market will hardly develop in US equity crowdfunding markets. *See* SCHWARTZ A. (2013).

[56] According to the US regulation "*A funding portal is defined as a crowdfunding intermediary that does not: (i) offer investment advice or recommendations; (ii) solicit purchases, sales, or offers to buy securities offered or displayed on its website or portal; (iii) compensate employees, agents, or others persons for such solicitation or based on the sale of securities displayed or referenced on its website or portal; (iv) hold, manage, possess, or otherwise handle investor funds or securities; or (v) engage in such other activities as the SEC, by rule, determines appropriate*" SEC (2012). As seen above, equity crowdfunding platform activity could be realized taking the legal form of broker-dealer or of funding portal. This last one is a new classification of intermediary created by the JOBS Act, subjecting equity crowdfunding portals to SEC regulation. The procedure introduced by the JOBS Act to be recognized with the SEC as a funding portal is simpler than the one provided for broker-dealer, although it provides more limitations from an operation point of view. These are: prohibition of offering investment advice and being in charge of investor education. This means that platforms have to provide educational materials without making recommendations or giving investment advice.

[57] US funding portals also need to take the necessary disclosure measures to reduce the risk of frauds. Concerning their relations with the issuers, portals has an important role in information disclosure. Indeed, they need to publish the information given by the issuer and provide for a "chat room facility" so that the "crowd" can discuss about the issuer's offer. Finally, they shall facilitate offers and sales of equity crowdfunding share but they are prevented from purchasing shares in the campaigns they are promoting. *See* ALDERMAM P. (2015).

[58] For more detail please *see* EUROPEAN COMMISSION (2013)

[59] Directive 2003/71/EC on the prospectus to be published when securities are offered to the public or admitted to trading

[60] Directive 2014/65/EU on markets in financial instruments

[61] The prospectus is the document that discloses all the necessary information, about the issuer and its offer, which are necessary for its investors in order to evaluate the investment and the connected risks. "*The prospectus shall contain all information which [...] is necessary to enable*

creation of a *full* prospectus is an expensive procedure that cannot be borne by startup or SMEs. It is the attempt to avoid this regulation, using the exemption provided by the Prospectus Directive that causes the major territorial limitation of equity crowdfunding in Europe. [62] This exemptions need to be introduced by each Member States in their national law. The most important exemption provides that offers of securities for an amount of less than €100.000 in a 12-month period are exempted by the application of the Directive and so by the publication of a prospectus. [63] The Directive grants each Member States to increase the threshold up to €5 million in a 12-month period, but to do so, each Member State needs to promulgate a specific legislation to define the increased threshold. The result is that each Member States set up a different threshold. [64] This also means that only offers that are above €100.000 have by default a "*cross-border value*" and could address potential investors in all Member States. [65]

Equity crowdfunding is based on the offering of shares to the public, implying also the taking in consideration of MiFID II. The Directive establishes a minimum set of rules to be respected by those firms providing financial services (e.g. reception, transmission and execution of transferable stock market transactions). [66] This Directive affects equity crowdfunding imposing rules on platforms on the fact that they "*help the trading* of *securities*". [67] Each Member State in the implementation of MiFID II in their own legislation provides for the introduction of different exemptions. One of the most common is the provision of a threshold under which the operation, although included in the ones listed above, is still exempted from MiFID II costly requirements. [68] Other exemptions regards, for instance, the trading of stakes in private company. [69]

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investors to make an informed assessment of the assets and liabilities, financial position, profit and losses, and prospects of the issuer and of any guarantor, and of the rights attaching to such securities" [Article 5.1, Directive 2003/71/EC]

[62] "1. Member States shall not allow any offer of securities to be made to the public within their territories without prior publication of a prospectus.
2. The obligation to publish a prospectus shall not apply to the following types of offer:
(a) an offer of securities addressed solely to qualified investors; and/or
(b) an offer of securities addressed to fewer than 150 natural or legal persons per Member State, other than qualified investors; and/or
(c) an offer of securities addressed to investors who acquire securities for a total consideration of at least €100,000 per investor, for each separate offer; and/or
(d) an offer of securities whose denomination per unit amounts to at least €100,000; and/or
(e) an offer of securities with a total consideration in the Union of less than €100,000, which shall be calculated over a period of 12 months.
However, any subsequent resale of securities which were previously the subject of one or more of the types of offer mentioned in this paragraph shall be regarded as a separate offer and the definition set out in Article 2(1)(d) shall apply for the purpose of deciding whether that resale is an offer of securities to the public. The placement of securities through financial intermediaries shall be subject to publication of a prospectus if none of the conditions (a) to (e) are met for the final placement.
3. Member States shall ensure that any admission of securities to trading on a regulated market situated or operating within their territories is subject to the publication of a prospectus." [Article 3, Directive 2003/71/EC]

[63] For the sake of brevity, other exemption from the Prospectus Directive that may influence less equity crowdfunding usage will not be reported and commented. For instance, the issuer is also exempted if the offer is presented to less than 150 natural persons. This requirement is difficult to be respected for internet-based platforms in which the limitation to 150 people will be easily exceeded. Another exemption provided for by the Directive is to address only "qualified investors", that is to say, professional traders or high net worth individuals who fulfill some criteria provided in the Directive.

[64] To be more clear, also the Prospectus Directive is a source of territorial limitation in the use of equity crowdfunding. Indeed, first the Directive does not contain an "adequate" exemption for cross-border operations, that is limited to the sum of €100,000. Second, the Directive give the freedom to each Member State to fix the exemption threshold between the sum of €100,000 and €5 million. The result of this freedom it is that each Member State has adopted different conditions to be exempted from prospectus requirements. Therefore, in relation to the same amount of shares offered, issuers can find in some Member States the full prospectus regime while in others the complete exemption. For instance, as reported by HOOGHIEMSTRA S.N. and DE BUYSERE K. (2015): in Estonia and Lithuania the threshold is set to €100,000; in Norway it is €1,000,000 while in Finland reach €1,500,000; the Netherland and Sweden have adopted a €2,500,000 threshold, while Spain, Italy, the UK and Denmark set the maximum of €5,000,000. HOOGHIEMSTRA S.N. and DE BUYSERE K. (2015), p. 138.

[65] *See* EUROPEAN COMMISSION (2013).

[66] *See* GABISON G. A. (2015a) p. 22

[67] *See* GABISON G. A. (2015a), p. 22

[68] SANNAJUST A., ROUX F., and CHAIBI A. (2014).

[69] Indeed, the great part of the companies using equity crowdfunding are at their early stage development so it is very uncommon for them to have shares traded in regulated markets. *See* EUROPEAN COMMISSION (2013), p. 33.

The examined Directives imposes to each Member State the issuance of a specific regulation, with the result that the same financing instrument is regulated differently across Europe. Direct implications of this non-harmonized situation are, on the one hand, possibilities of arbitrage or concentration of companies and platforms in States with the more favorable legislation; [70] on the other, also in case, territorial limitation in the usage of this financing instrument. The result of this non-harmonized situation is a limit to the cross-border use of equity crowdfunding in Europe. Limitations that should not be accepted in the European market where the will to constitute an internal market based on the *four freedoms* exists. [71]

2.4.2.2 United Kingdom "non-specific regulation" approach.

United Kingdom equity crowdfunding market is the widest in Europe. The merit is in UK approach to equity crowdfunding regulation that consisted in not issuing a specific regulation on this instrument. [72]

The first principle of UK approach to equity crowdfunding is that all equity crowdfunding campaign needs FCA approval. Indeed, every offering of securities through a platform is considered as a financial promotion under UK Law, that is to say, an invitation or inducement to engage in investment activities. So, all financial promotions addressing retail investors must be communicated and receive the approval of a FCA-authorized firm without exceptions. [73] This rule is successful because FCA revision of the offering induce more trust in investors that can count of FCA first due diligence, reducing to the minimum the risk of fraud. More trust means more investors participation.

FCA authorization is also necessary to operates as crowdfunding portals. Platforms need to be authorized by the FCA according to the Financial and Services Markets Act (FSMA), requiring compliance with the FCA's business code of conduct. [74] Although this could be seen as a problem if associated with the low value transaction linked with crowdfunding, it should be noted that this expensive procedure did not stop English equity crowdfunding market from blooming. So also the solution to maintain controls on the *gatekeepers* has been a good choice in terms of markets results, although it may be the cause of the few numbers of UK equity crowdfunding platforms and its high concentration level.

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[70] In addition, another source of territorial limitations is represented by the other rules of company law of each Member State. As pointed out by HOOGHIEMSTRA and DE BUYSERE (2015), these kinds of limitations could be categorized as "public offer limitation", already described, and "other substantial formalities" that makes prospectus exemptions useless, thus eroding the benefits that this regulation introduced. HOOGHIEMSTRA and DE BUYSERE (2015) report that, an example of the first group can be found in UK legislation. This left untouched national company regulation, so issuers that want to use crowdfunding need to set up an "expensive" public limited liability company. The second group includes Italian or German legislation that requires the presence of a notary for activities such as shareholders' resolution or subscription, in this way, bringing the operation "offline" and requiring the expensive presence of all the potential shareholders in the same place. – *Id.*

[71] "The internal Market shall comprise an area without internal frontiers in which the free movement of goods, persons, services and capital is ensured in accordance with the provisions of the Treaties" [Article 26(2) TFEU].

[72] Initially there was lobbying activities to regulate this instrument by means of dedicated rules, the Financial Conduct Authority, instead, acknowledged the possibility to use equity crowdfunding as a valid business model under the existing regime with only little amendments. BLAIR D. and PRINGLETON A. (2014a). The success of this choice is also confirmed by the opinion of UK equity crowdfunding markets operators. Indeed, in a recent study conducted by the CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2016) the 93% of crowdfunding platforms confirmed the regulation to be adequate and appropriate to their activity. CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017), p. 25.

[73] In this case, the financial promotion needs to comply with "*Chapter 4 of the FCA's Conduct of Business Sourcebook*" to ensure that the promotion is clear, fair and non-misleading. The only exception to the FCA approval is to use the *existing shareholder exemption*. To so do, the platform needs to creates a former shareholder relationship with all investors and a parent/subsidiary with the issuer but this is not very common. *See* BLAIR D. and PRINGLETON A. (2014a).

[74] Authorization is quite expensive in terms of time and money. Experts estimate that the procedures will cost around £150,000 plus six to nine months of compliance work before filing and other six months after the filing. *See* GABISON G. A. (2015a)

UK regulation keep on protecting investors establishing that only certain investors can receive direct offers from issuers or platforms. These are: retail consumers who take "*regulated advice*", [75] investors who certify themselves as high net worth or sophisticated investors and those who confirm that will invest no more than the 10% of their net asset on a 12 months period. This last category shall confirm in writing this fact. [76] So, first, investor protection is realized limiting the categories of investors allowed to participate in equity crowdfunding campaign; secondly, outside of this categories, protection is granted imposing an "auto-certified" limit to all the others. In addition, the proper protection of consumers is also granted through FCA supervision of the market. In particular, this includes monitoring platforms website and reviewing monthly information provided by the issuer. The scope is to verify that platform discloses all the relevant information in a way to let potential investors make informed decisions. FCA directly monitors financial promotion and takes action against firms that do not respect its standards. In this way, parts of the costs aiming at protecting investors is sustained directly by the government and the regulator.

But some important rules in improving equity crowdfunding development has been take also with reference to the issuer. After creating a "safe" area for the investors thanks to the rule already discussed, UK regulator gives issuers free space to operate. Indeed, Prospectus Directive [77] has been implemented in the most favourable way for the issuer. [78] In UK the regulator decided to use the prospectus exemption as wide as permitted by the Directive. For this reason, each issuer is exempted from the publication of a prospectus if the collection is less than £5 million in a 12 months period. [79] Indeed, in a situation in which compliance costs are borne mostly by platforms and to investors are given as much guaranties as possible, there is no use for limit issuers' collecting capacity .

Finally, the better part of UK regulation for equity crowdfunding concern policies that enhance the use of equity crowdfunding through mechanisms of tax relief. [80] In this way, UK regulation not only aims at

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[75] "Advice relating to a particular investment given to a person in their capacity as an investor or potential investor (or their agent) and relates to the merits of them buying, selling, subscribing for, or underwriting (or exercising rights to acquire, dispose of, or underwrite) the investment". For further information, *see* FCA (2015)

[76] FCA (2015b)

[77] The *Prospectus Directive* was implemented in the UK through the Prospectus Regulations 2005 (SI 2005/1433), amending the Financial Services and Markets Act 2000 (FSMA) and introducing amendments to the FCA Handbook, such as the introduction of the Prospectus Rules.

[78] With regards to the implementation of other European Directive, the *AIFM Directive* needs to be taken in consideration as regards some platforms that fall also under the FCA regulation of Collective Investment Schemes (CIS). In this field, there is often an overlap of legislation between the Directive and the UK existing regime for CISs, because most of them will constitute an alternative investment fund. This is a more burdensome legislation and, for this reason, issuers and platforms usually avoid this kind of schemes. The application of these rules is possible when the platform, acting as a fund, does not help the creation of a common issuer/shareholder relationship, but instead pools investor's contribution or of their income prior to the distribution without any involvement of shareholders in the day-to-day management of the company. This leads to the creation and the management of an AIF. For a platform adopting the described business model, the AIFMD will impose a heavy regulation burden on fund operator falling within the scope of the Directive. However, in the UK the impact of this regulation is reduced in comparison with other European countries, because of the existence of a "*light-tough regime*" for funds with total assets under €100 million. In this case, not only the registration requirements are reduced, but the regime also allows marketing of AIF to retail investors in the UK, provided that the AIF is also a regulated CIS. For more information *see* BLAIR D. and PRINGLETON A. (2014a).

[79] *See* GABISON G. A. (2015a), p. 30

[80] There are at least two instruments to realize this scope. The first is the Enterprise Investment Scheme, a relatively old instrument, introduced in 1994, aiming at encouraging the financing of company not listed in stock exchange which investment is riskier. To do so, it provides the following benefits: (i) 30% income tax relief for the present or the past tax year, for a maximum amount of £1 million; (ii) 100% inheritance tax relief if the shares are held for more than 2 years; (iii) 50% Capital Gains Tax Re-Investment relief; and (iv) an eventual Tax Relief in case of investment losses.

In addition to the described, in 2012, to encourage startup financing, the UK Government enacted an "update" of the just mentioned scheme, creating a startup tailored instrument: the Seed Enterprise Investment Scheme. The guidance principles are the same of the EIS but with a higher tax relief. The rules are the following: (i) investor can have a 50% relief for income tax on the cost of shares for a maximum amount of £100,000 in a Year; (ii) no capital gain tax on profit from shares held for at least three years. This time will not expire if the shares are sold and the capital gain reinvested into qualifying SEIS shares. This rule is valid under the threshold of £100,000 per year; and (iii) 100% inheritance tax relief.

There are also some rules to be respected in order to receive this tax benefits. Indeed, investors shall not be an employee of the company and the shares, which have been issued or held, should not represent more than the 30% of the company. At the same time, any issuer who wants to make

protecting investors before they takes investment decision. Protection goes far, giving aid to investors also in the worst situation, that is the failure of the company, through mechanism of good tax relief.

2.4.2.3. Italian regulation: opportunity and limitation.

In 2012 Italy was the first European country issuing a specific regulation dedicated to equity crowdfunding. [81] But doing so, Italy was also the first Member State limiting it.

Two were the main limitations introduced by Italian regulation: the first regarded "*who could use*" equity crowdfunding as a financing instrument; the second, instead, "*who is forced to invest*" for the legislative success of the campaign. This two main limitations were one the reason that slowed more Italian equity crowdfunding market. Only in 2017 the first of this two has been removed while the second one has been relaxed as will be reported below. In Italy equity crowdfunding has been introduced as a mean to promote innovation, [82] so only companies that met certain "innovative" conditions had access to this financing instrument. To do so, Italian regulation introduced two new legal companies' statuses: Innovative Startup (ISU) [83] and, after three year, Innovative Small and Medium-size Enterprises (ISME). [84] Only in 2017, with a delay of four year, with Law Decree n. 50/2017, Italian regulator finally decided that all SMEs could access equity crowdfunding. [85] The fact of having this rules for more than two years

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the share issued as eligible for these benefits should follow some additional rules: it shall not raise more than £150,000 through SEIS and shall not have more than 25 employees; his assets cannot be worth more than £200,000 before the SEIS; should not have been incorporated for longer than 2 years prior to the issuing of shares; and the company needs to operate in a business comprised in the SEIS/EIS permitted list.

[81] This introduction has been made with artt. 25 to 30 of Law n. 221/2012, dedicated to "innovative startup". The law was implemented with by Italian Securities and Exchange Commission (Commissione Nazionale per la Società e la Borsa, hereinafter CONSOB) on 26 June 2013, with the first draft of CONSOB Regulation 26-06-2013, n. 18592, 'Raccolta di capitali di rischio da parte di start-up innovative tramite portali on-line', at last amended with CONSOB Resolution n. 20204 of 2017. Updates and innovations followed with Law Decree n. 3/2015 converted into Law n. 33/2015, published on March 2015, with Law n. 232/2016, and, last, with Law Decree n. 50/2017, converted into Law n. 96/2017. For more detailed information, *see* DE LUCA N. et al. (2017)

[82] Italian regulation kept on associates to these two kinds of companies not only the possibility to use equity crowdfunding, but also a lot of other advantages such as tax relief, reduction of duties for the subscription in the business register, flexible remuneration and flexible management system. All these benefits are the reason why there are so many conditions to fulfill and the discipline is so stringent. The initial intention of the Italian Regulator was to provide innovative companies with some instrument to develop easier their business models. In this vision, equity crowdfunding was *only* one of all this instrument and, for that decision, it was *doomed* to be used only by innovative companies. *See* DE LUCA N. ET AL (2017) p. 5.

[83] The definition is given by Art. 25, comma 2, Law Decree 179/2012. ISU was introduced in 2012 with the first crowdfunding regulation. In 2012 only company fulfilling the following conditions could have access to equity crowdfunding. These are: (i) have an innovative purpose; (ii) satisfy at least one of the three following requirements: (i) at least 15% of the major between the company's expenses and net turnover shall be used for research and development activities; (i) at least 33% of the total employees shall be holder of PhD or researcher, or at least 66% shall be holder of a Master's degree; (i) hold, possess or be licensee of high tech patent rights linked with the main purpose of the company.
In addition, the company shall have been set up no more than 5 years before filing for the ISU status, and it may benefit from the status for no longer than 4 years. The creation of the company should not be the result of mergers, divisions or as a transfer of a company branch. It shall not be listed nor shall it have shares significantly spread among investors. Finally, one of the most important aspect to highlight for our purposes is that ISU cannot pay dividends and it has to maintain a net turnover for two fiscal years lower than 5 million euros. These two limitation has a clear influence on equity crowdfunding development. Indeed, financing an ISU through equity crowdfunding means financing a company with a limited possibility to obtain a return from the investment in the short period, given the impossibility to pay dividend.

[84] The definition is given by Art 4, comma 1, Law Decree 3/2015. After three years, considering the underdevelopment of Italian crowdfunding market, it has been decided to wider the group of companies that could have access to this instrument. For this reason, Law Decree n.3 of 2015 introduced a second status, so giving the possibility also to a small group of small-and-medium size enterprise to access equity crowdfunding. However, the innovative requirements were still required. Indeed, a company is considered as an ISME when it satisfies at least two of three requirements, similar to the ones provided for the ISU status. Those are: (i) at least 3% of the major between the company's expenses and net turnover should be used for research and development activities (R&D) ; (ii) at least 20% of the total employees is holder of PhD or researcher, or at least 33% is holder of a Master's degree; and (iii) hold, possess or be licensee of a high tech patent rights linked with the main purpose of the company
Moreover, the company should not be listed in a regulated market and its last annual account shall have been audited by a recognized accountant or accounting firm. The company shall not be an ISU and it shall respect the requisites provided by the EU regulation in the definition of Small and Medium-size Enterprise. The company needs to have its registered office in Italy or in another European country, but, in the latter case, it shall have at least a branch in Italy. Finally, the same regulation error committed for ISU was replicated for I-SME. Indeed, also those company was prohibited from paying dividend while maintain the status of I-SME, in this way limiting their attractiveness for investors.

[85] In reality, this innovation confused the role of the Italian private company (s.r.l.) with the Italian public company (s.p.a.), providing that also the first, traditionally closed companies, could have their share offered to the public while providing a quite complicate mechanism to favor its trading. providing that also the first, traditionally closed companies, could have their share offered to the public while providing a quite complicate mechanism to favor its trading. *See* DE LUCA N. ET AL (2017), p. 6 for a specific critic on this matter. *See* also DE LUCA (2016)

was perhaps the reason why Italy was the first Member State to regulate crowdfunding but also the last in terms of using it, compared with any other major European country.

The second limitation introduced by Italian equity crowdfunding regulation regards those who *must* invest in each campaign to determine its success. Indeed, each campaign is correctly completed only if "*professional investors*" [86] subscribe at least the 5% of the offered capital. Fortunately, the definition of professional investor became wider with the following amendments to the regulation. It currently includes bank foundations, investment companies, financial institutions for innovation and development, innovative startup incubators, and "professional investors on request". [87] In this ways, this category it is now enough wide so reaching the 5% it is easier that when it was introduced. But in concrete this rules is a strong limitation for equity crowdfunding development. The first reason is that institutional investors follow investment strategies that are different from retail ones. This logic affects the different choices that they take, with the result that a risky investment could be supported by a "professional" investor without that fact representing a guarantee for the others. Another reason is linked with the amount/portion of the offer that institutional investors are required to subscribe that in some cases cannot grant the returns they expected. [88] All these principles reduce the interest of institutional investors in equity crowdfunding campaigns and so decreasing also the probability of closing a successful campaign. [89]

On the other side, differently from other European countries, investors do not suffer other kinds of limitations: retail and professional investors can invest as much as they want. [90] In addition, regulation protects investors granting them a right to withdrawal from the investment, to be exercised within 7 days after the adhesion or within 7 days when major changes occur in the situation of the startup or in the offer conditions. [91]. In this way, investors are protected against future and sudden changes in the property structure.

Italian regulation provides a specific regulation also for equity crowdfunding platforms. To exercise their activity, they need to be enrolled in a public register held by CONSOB. The regulator provides the existence of two kinds of platforms: (i) "De Iure Platforms", that is to say, investment companies or banks

[86] The complete definition is given by TUF art. 6, commas 2-quinquies (private professional investors) and 2-sexies (public professional investors).
[87] This category, introduced in 2016, include single individuals with proved experience of investment in startup and determined patrimonial requisites. *See* DE LUCA N. ET AL (2017)
[88] For instance, in a campaign where a total amount of €100,000 or even less is offered, a professional investor is required to invest at least €5,000, that is to say a very small amount of money that will not grant a return able to repay the cost of analyzing the opportunity of the investment itself. *See* ALLEGRENI F. (2015)
[89] Moreover, this mechanism is also source of confusion and misinformation during the campaign. Because the rule says "5% of the collected money" and there is often a high divergence between the fixed goal and the funding limits investors and issuer will not know whether the campaign is successful until its last moment. To explain this concept, it may be useful to consider the following example. In a campaign in which the funding goal is 100 and the funding limit is 200, when the amount of 100 is reached, all the money collected between 100 and 200 will be taken by the issuer. Now if 95 has been collected only by retail investors and the institutional one invested the required percentage, i.e. 5, if immediately before the closing of the campaign, one retail investor decides to invest whatever amount, the campaign will (absurdly) fail. There are numerous examples based on that principle. Another is the case in which the funding limit is reached only by retail investors before the expiration of the campaign. Here, the company will need to issue more capital and to modify its offer on the run, to "give more space" to professional investors. But to do so, the issuer needs the approval of its general meeting and of the platform. The direct result is also, in this case, uncertainty and confusion.
[90] GABISON G. A. (2015b).
[91] A similar right needs to be provided also in the Article of Incorporation of the startup offering its shares in a crowdfunding portal. This is granted imposing to the issuer an obligation to add a "tag-along clause" in favor of the investor if the majority of shares is sold within 3 years after the offer or before the ISU status expires. *See* DE LUCA N. (2015).

that can be enrolled in the CONSOB Register just giving an advanced notice; [92] and "Special Website Managers (SWMs)" [93], which are mainly designated companies that have to meet the requirements provided by TUF [94] and decide to carry out the business of online funding portals. [95] The regulation provides other duties for funding portals [96] and there is also a list of information that shall be published, [97] but the information published on an equity crowdfunding platform are not reviewed by CONSOB.

Italy implemented highest threshold exemptions provided by Prospectus Directive, letting issuer raise up to €5 million in a 12-months period. Issuers are so exempted from the costly disclosure duties provided by the Directive. This is the same choice made by the UK. In both countries the public will decide if the amount requested is coherent with the project presented. However, some disclosure requirements for the issuer still exist. The most important among these is the *simplified informative document*, a 5 pages-paper that needs to be published in the funding portal but does not need to be revised or submitted to the CONSOB. [98]

A good system of tax relief is also present in Italy [99] although it is not so strong such as the one provided in UK also because it is provided only if the issuer is a ISU or a I-SME. For instance, with a relief that reaches, in the worst circumstances, more than the 75% of the amount invested, the UK protects investors in the best way, sustaining them only in the worst scenarios and encouraging them to use this instrument.

2.4.3 Legislative principles fostering and limiting equity crowdfunding development

It has been shown that the risk of fraud is the biggest enemy in the development of equity crowdfunding. [100] For this reason, the general rule is that a good equity crowdfunding regulation should pursue two complementary goals. On the one hand, the creation of enough confidence in investors through adequate protection; on the other, it should make the access to crowdfunding not unduly burdensome for investors and potential issuers.

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[92] This means that, according to Italian law, this companies already hold all the requisites to manage this activity. They are not so much spread in practice, indeed there are only two *de iure* platform. This demonstrate at least two things: the first is that equity crowdfunding market in Italy it is too small to justify an investment of already existing financial intermediaries to enter the market; the second is that intermediaries do not feel the need to enter this market because alternative finance operator are not seen as competitors yet.

[93] Definition of DE LUCA in DE LUCA N. (2015).

[94] Art. 50-Quinquies

[95] As far as the second kind of platform is concerned, a particular discipline, caring for investor's protection, is involved. For this reasons, any company that decides to pursue this kind of business needs to have the platform management as its exclusive purpose and its managers shall respect honorable and professional requirements. In addition, SWMs cannot hold sums of money or financial instrument belonging to third parties and they need a bank or a financial company to transmit the orders regarding the underwriting of the shares offered. PIATTELLI U. (2014)

[96] They have to publish all the information regarding the offer in clear, non-misleading form and without omissions, in a way that could lead investors to fully understand the nature of the investment and the risks associated to it.

[97] In particular, this information are: (i) corporate details on the funding portal company (shareholders and managers) and on the activity of the portal, such as costs to be borne by the investors, measures applied to reduce fraud risks, measures undertaken to manage conflicts of interest and aggregate data of the offers carried out through the portal; (ii) warnings about the risks associated with investment in financial instruments issued by innovative start-ups, such as the risk of loss of the entire investment, risk of illiquidity, prohibition of distribution of profits, tax treatment of the investments (with reference to cases where the benefits may be disapplied) and typical content of a business plan; and (iii) with reference to each single offer of financial instruments by a given issuer company, the offer itself, the details on the bank or investment company which treat and process the orders and the frequency of updates on the subscription campaign.

[98] Attachment 3, CONSOB Regulation 26-06-2013, n. 18592.

[99] According to Law n. 221/2012, investment in ISU or I-SME provide a tax relief between 19% and 20% for investment made respectively by physical and legal person. The relief is higher if the companies has a social purpose (from 25% and 27%). In addition, Law n. 232/2016 enhanced the tax relief mechanism that now is the same for all the kind of investment and it is up to 30% of the investment made through equity crowdfunding.

[100] This opinion is also shared by NAJJARIAN (2013), who criticizes crowdfunding since he describes it as an easy way to steal money from the internet without any regulation and investor protection, compared to regulated capital and stock market. NAJJARIAN, I. P. DE N. (2013).

In the relation between equity crowdfunding market and its regulation two different kinds of correlation could be found. Indeed, there is a positive relation with rules favoring investor protection without imposing excessive compliance costs to the issuer. This is the case of UK where regulation protects investors during each phase of the investment process. In doing so, equity crowdfunding campaigns are supervised and require FCA acceptance before being published in the platform; platforms require FCA approval to operate as if they were financial intermediaries; and investment is stimulated by a wide mechanism of tax relief that protects investors also in case of failure of the company. In this way a considerable burden of the compliance cost is borne by the regulator, enhancing trust of investors vis-a-vis the issuer. On the same line are the US rules imposing only "proportional" disclosure obligation to the issuer. Conversely, only some of this rules has been introduced in Italy, where: campaigns and information published therein do not require CONSOB approval; platforms need only to file for the registration in a special section of the enterprise register; and tax reliefs for investment in equity crowdfunding are limited to the 23-27% of the investment and only if the investment is made in an innovative company.

A negative relation could be also found with reference to those rules that impose territorial limitation of equity crowdfunding use. From this point of view the US is a case of success. Here crowdfunding regulation pre-empt state law on this matter. Contrary, it is not the case in Europe where territorial limitation are created by the European Directives and their application (e.g. Prospecus Directive) The result is that platforms and companies are not allowed to publicize their offers in other countries, in this way limiting an instrument that, for its nature, should not have limits. [101] In Europe, the lack of a unique equity crowdfunding regulation limited its use as the market data confirms if compared with the volume reached by the US' one. At the contrary, the no existence of territorial limitation in using equity crowdfunding USA is of the reason for its success as demonstrated by USA equity crowdfunding market volume against the UK one. [102]

In addition, the correlation between equity crowdfunding development and rules limiting the access to this instrument is negative. This could be demonstrated considering Italian framework where until few years ago, only "innovative" companies could use equity crowdfunding. Therefore only after having registered in a special section of the company register, those companies could undertake an equity crowdfunding campaign. It is maybe not a coincidence that after the removal of such limitation, also in Italy equity crowdfunding growth rate considerably increased.

2.5 …and entrepreneurship level.

Development of equity crowdfunding market is also influenced by how easy is to start a successful business in a specific country. Indeed, the more it is easy to carry on a successful business according with

[101] According to this Communication, only 38% of the platforms operate cross-border and 27% cite the high cost of getting an authorization in another Member State as a reason for carrying on only domestic operations. EUROPEAN COMMISSION (2014), p. 8.
[102] Also past experiences give us a demonstration of this: territorial limitation was the reasons for the failure in the USA of the old Regulation A. There, issuers considered compliance with the Blue Sky Laws of each state in which they wanted to address potential investors excessively expensive, meaning the aforementioned regulation was under-used. Now replaced by Regulation A+ as described above.

the condition find out in a considered country, the more are the possibilities that that entrepreneur will use equity crowdfunding to finance its business.

The Global Entrepreneurship and Development Institute (hereinafter GEDI) has developed a specific index to measure the entrepreneurship level of a specific country: the Global Entrepreneurship Index (hereinafter GEI) [103]. GEI is "*a composite indicator of the health of the entrepreneurship ecosystem in a given country*" that "*measures both the quality of entrepreneurship and the extent and depth of the supporting entrepreneurial ecosystem*". [104] The measurement is based on 14 "*pillars*" that according to the GEI are the components of an ecosystem favoring entrepreneurial success. [105] So, GEI considers how much the entrepreneurial ecosystem of a country is developed in a way to facilitate opening and conduction of new business activities.

According to the ranking created by the GEDI, Italy is quite far from US and UK. As shown in Figure 12 below, while US and UK, are, respectively, in the 1st and in the 4th place, Italy occupies only the 42sd position on the 137 countries considered in this research.

Rank	Country	Global Entrepreneurship Index
1	United States	83.6
2	Switzerland	80.4
3	Canada	79.2
4	United Kingdom	77.8
5	Australia	75.5
…	…	…
40	Tunisia	42.4
41	Puerto Rico	42.1
42	Italy	41.4

Figure 12 - Global Entrepreneurship Index Ranking 2018

Source: Adapted from Global Entrepreneurship and Development Institute

The different entrepreneurship level of those countries could be a valid explanation of the different volume of their equity crowdfunding market. Indeed, a part from the above consideration on the "domestic" use of equity crowdfunding platforms, countries with higher entrepreneurship level could act as magnet for foreign companies. Those companies may decide to carry on their business in that country and so also use equity crowdfunding in that country.

[103] For more information, please *see* https://thegedi.org/global-entrepreneurship-and-development-index/.
[104] ÁCS Z., SZERB L. & LLOYD A. (2018)
[105] The mentioned pillars are the following: Opportunity Perception, Startup Skills, Risk Acceptance by individuals, Networking, Cultural Support, Opportunity Motivation, Technology Absorption, Human Capital, Competition, Product Innovation, Process Innovation, High Growth, Internationalization, Risk Capital. For more information please see: ÁCS Z., SZERB L. & LLOYD A. (2018) or http://thegedi.org/

2.6. Conclusion and suggestions.

Although its growth rate in some country is already reducing (e.g. USA), equity crowdfunding is still a developing phenomenon. Also for this reason there is still no clear evidence nor enough studies dealing with the direct and concrete determinants of equity crowdfunding development. The first part of this paper represent one of the first attempt to highlight possible equity crowdfunding relation with banking sector, financial market, regulation and entrepreneurship level of a considered country.

Findings suggest that equity crowdfunding is inversely correlated with banking sectors but directly with development of financial market. Banking sectors has been analyzed in terms of SMEs loan availability and market concentration; financial market in terms of its development and population financial literacy. Direct relation exists also with reference to the entrepreneurship level of each interested country. From this point of view, these three variable may be considered as the ground on which equity crowdfunding have to develop. Indeed, both these three elements are conditions that pre-existed the common use of this innovative financial instrument by companies. This also means that it is more difficult for each country to intervene on those elements in order to help equity crowdfunding development.

Differently, this is not the case for equity crowdfunding regulation. New rules has been introduced or old rules has been adapted with the specific aim to address equity crowdfunding functioning. This also means that regulation could be used in the attempt to enhance equity crowdfunding development. When it is too hard, or even impossible, to intervene in all the other variables, equity crowdfunding regulation amendments could be considered as valid opportunity to enhance its usage and development.

3. Success drivers of equity crowdfunding

In this section the typical investors of equity crowdfunding, how they take investment decisions and the success drivers of an equity crowdfunding campaign will be presented. Differently from section 2, here "success drivers" means the factors that attract investors so that the equity crowdfunding campaign could be successful. So to do identify which are *this* success driver of an equity crowdfunding campaign, first, some of the determinants identified by the current literature on this theme will be reported. Then, the drivers listed will be taken as starting point and integrated with other potential drivers that an investor could take in consideration before investing, in order to define the ones applicable to the Italian equity crowdfunding markets. [106] A case study presented in the last part of the section. will study the effect of

[106] An adequate selection is, indeed, necessary because there is still no updated research of this theme analysing Italian framework. The reason could be the scarcity of available data that only in 2017 increased together with the development of Italian market for this instrument. The mentioned selection it is also necessary because the few researches that compose the current literature has been conducted in countries (the principals are the UK, Finland and Australia), where different regulations or different funding mechanism were in force. Finally, in line with the observations reported above, regarding herding behaviour and investors' dedicated time to conduct due diligence, preference will be accorded to those drivers that are linked to information that could be easily observed by the typical equity crowdfunding investor. Indeed, the assumption is that the typical crowdfunding retail investor will not be interested in reading information that he has to look for out of the platform or in an easy way. At least he will use its personal knowledge or ask for more information in the Q&A section. Differently, in case of lack of information, he will simply decide to not invest.

those variables on the success of the equity crowdfunding campaigns conducted on one of the major Italian equity crowdfunding platform: CrowdfundMe. [107]

3.1 General characteristics of the typical equity crowdfunding investor

The number of people that is approaching equity crowdfunding market is considerably increasing. For instance, in 2016 in UK the number of investors went up by 131%, reaching over 2.5 million. This number includes an estimate participation of 2.500 institutional investors, providing a 139% increase of this class over the previous year. Also in Italy in 2016 an increasing of the 93% of the number of investors previously registered has been registered and the data for 2017 are expected to be also higher. Institutional investor participation in the US increased from the 21% of 2015 to the 27% of the 2016. [108] In Italy, in 2016 institutional investor represented the 9% of the total investor while in the UK, as reported above, this percentage is around 1%. [109]

The typical equity crowdfunding investors is a male. [110] This is true in the UK, where only 13% are women, with a slight increase of 5% from the previous year [111]. A similar rate of women participation has been registered also in the USA where female participation is only around the 10%. [112] Also in Italy women participation is quite low, reaching a 15% with a reduction of 3% from the previous year. Data reports that also the average investor age is changing. In UK, for instance, the 38% of the 2016 equity crowdfunding investors are under 35 years old, up from 28% data of the 2014. This at the detriment of investors between 35 and 54 who decreased from 46% to 36%. [113] In Italy, in relation with the age, the major participation comes from adults from 36 to 49 years (46%), while the participation is lower with regards to young (26%) and older investors (28%). The first maybe for lack of funds available while the last for difficult in approaching this new and Internet-base financing way.

Data on investors education has been made available only in the UK. The research shows that only the 17% in the UK do not possess at least a degree in 2014 with a little increase, lower than 5%, in 2016. Moreover, having regards to investors income, the same research shows that equity crowdfunding has a really low proportion (around 17%-16%) of funders with an annual income of less than £25,000. [114]

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[107] CrowdfundMe is one of the first platforms operating in Italy after that the first regulation of equity crowdfunding has been enacted. It is also the first Italian platform for number of published projects and the second for the amount of money raised. Differently from the other equity crowdfunding platforms operating in Italy, CrowdfundMe is one of the best for number of projects published and for quality of information disclosed. Considering that every equity crowdfunding platform has some freedom in deciding which are the issuer information that must be published, therefore it is difficult to make comparison between different campaigns published in different platforms. In addition, CrowdfundMe makes available information of a crowdfunding campaign also years later after its conclusion. It is the only that makes clearly available data on investors participation, recording and showing the day and the amount invested by them. As will be explained, those are fundamental information that enhance the probability to avoid herding behaviour. CrowdfundMe has a simple functioning. The platform gives the possibility to the issuer to promote his campaign on the platform. The issuer sent a summary of the idea to the platform that, after a positive screening of its potentiality decides to publish the project. If the campaign is completed with success, the platforms retain the 7% of the amount collected. For more information on the platforms, please *see* www.crowdfundme.it

[108] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017b) p. 16.

[109] CAMBRIDGE (2017) p. 27

[110] Against an usual average of 50% of women participation in reward and donation crowdfunding.

[111] However, this data slightly changed in terms of invested funds where the proportion of finance from female investors is higher (19%). This also imply that, although female investors are fewer than the male counterpart, considering the single investment on average they invest higher sums that man. CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017) p. 29

[112] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017b) p. 53

[113] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017) p. 31

[114] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017)

From this information it is possible to understand that funders of equity crowdfunding typically have high incomes and are well educated. This imply not only their capacity to understand the risks of those investment, that is to say the possibility to lose some money in an illiquidity investment without any dramatic implication for them, but also that in countries with higher financial literary rate, an equity crowdfunding regulation could care less about investor protection. This is truer when issuing a particular rule enhancing investor protection may have negative implication in terms of higher disclosure costs for issuers. In conclusion, apart from institutional investor participation, it is possible to signal a great similarity between the data on Italian, UK and US investors.

3.2. Decision making process

The aim of this paragraph is to identify how investors take investment decisions. To do so it is important to understand that investors in general may have access to two kind of information: (i) information of public register; and (ii) information made available by the issuer. The first group considers all the information that the law of each country requires the company to public annually. [115] In the second there all the information that the issuer decide to "self-disclose" in the absence of precise regulation on this obligation. [116]

Financial data that are always present regard: the amount of money requested, i.e. the *funding target*; the percentage of company shares offered for the subscription, i.e. the *equity offered*; the *pre-money valuation* of the company, that is to say its value before the capital increase requested by the equity crowdfunding campaign. Instead, financial information that are not always disclosed are data regarding future revenue streams, costs structure and profits forecasts. [117]

3.2.1. Business model analysis…

Given the novelty of this financial instrument, there are not empirical researches analyzing which information are considered by an equity crowdfunding investors before taking investment decision. One of the more completed has been conducted in UK. Its results, exposed in Figures 13 and 14, shows, at least, two relevant data regarding information analysis. [118] The first reports that time dedicated to due diligence procedure is not so much. Only the 14% of the interviewed investors spent more than two hours per week studying the documents published in the crowdfunding platforms; while the 49% spent less than

[115] These usually comprehend, apart from general information on the corporation, such as amount of subscribed capital or number of shareholders, and published economic information i.e. balance sheets.
[116] The reason of this "high level disclosure" is in line with the aim of equity crowdfunding regulation to lower disclosure costs that, instead, need to be afforded going public through traditional forms, such as IPO. For this reasons, the business models of company raising money through equity crowdfunding platforms are very simple and contains usually the following information: (i) general presentation of the company and of the project, containing also the reason why an investor should invest; (ii) some historical data, comprehending results reached in terms of clients, growth, products or services sold; (iii) how money requested will be used; (iv) who are the members of the team; (v) and, although not always presented, some other strategical data such as competitors, markets descriptions, target clients and revenue streams. In variety of information, usually there are also some financial information.
[117] Another important information that is always shown in the platform is the number of investors that already subscribed companies shares. Its role in creating herding behaviors will be described in the following paragraph.
[118] CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017), p. 35-36

one hour. Considering the information published, just one hour is real few time to make a fully conscious investment decision or to elaborate companies financial data.

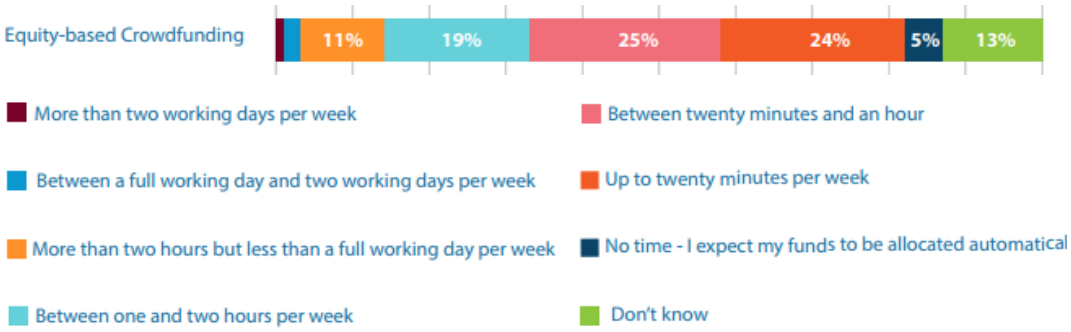

Figure 13 – Time Per Week Spent Picking Potential Investments (2016) in UK
Source: Cambridge Centre for Alternative Finance (2017)

In light of the few time spent on the platform making due diligence, considering also the premises on the quality of the information published, it seem that *typical* equity crowdfunding do not look for strong economic proves before taking investment decision. So, if not in economic data, that are considered quite superficially, the question should be *where* investors find the needed trust to participate in a crowdfunding campaign.

To answer this question it should be considered that, according to another research of the *CAMBRIDGE CENTRE FOR ALTERNATIVE FINANCE (2017)*, an high percentage of investors (the 57%) trust the due diligence made by the platform before accepting the crowdfunding campaign promoted by the issuer, although generally those due diligence aim only at avoiding fraud attempt and do not regard financial indicators. However, the real data is represented by the 28% of investors that declared to trust the due diligence made by other investors. A percentage that surpass the number of investors that perform due diligence their-self (only 26%).

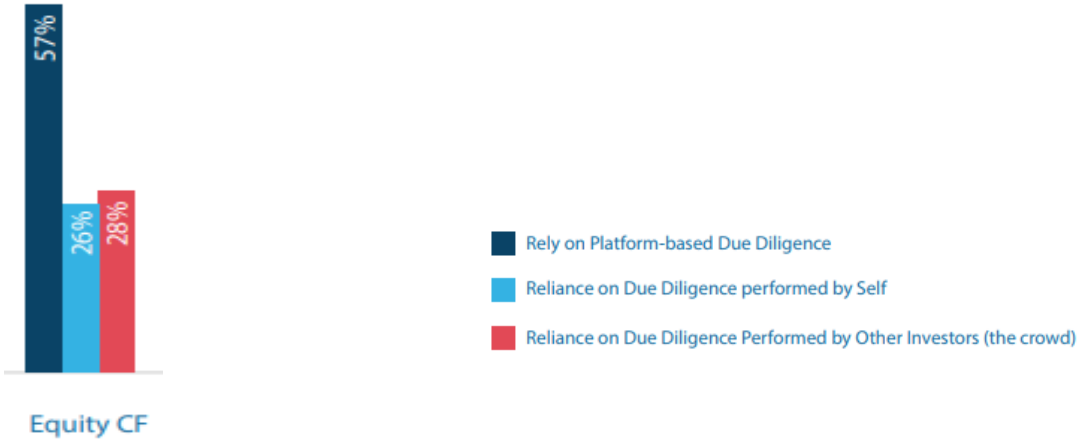

Figure 14 – Funder Reliance on Due Diligence When Selecting Investment Opportunity in UK
Source: Cambridge Centre for Alternative Finance (2017)

From the reported data, the conclusion that should be drawn is that the typical equity crowdfunding investors is not really interested in checking for economic information before taking investment decision. Differently, the more a crowdfunding campaign attract investors, the more others will invest. This is in line with the exposed mechanism called *wisdom of the crowd*. According to this theory, investors feel more protected although few information on the issuer are available. The crowd is seen as a collector of information, reducing asymmetry risks and highlighting false of wrong information. If a great number of investors have participated in the campaign without highlighting negative reason to invest [119], this is considered as a signal that the issuer is trustworthy and the investment potentially profitable.

3.2.2. ...or herding behavior?

On the other hand, the fact that equity crowdfunding operates in a "crowd-system" could be a source of peril for investors when mechanisms of herding behavior takes place. This is truer when, immediately after the launching of the crowdfunding collection only few information are available to investors. [120] In this stage, the *wisdom of the crowd* could not really operate because a crowd does not still exist. It is here that herding behavior may take place. According to ARMOUR and ENRIQUES (2017) [121], the sequential arrival of investors, instead of collecting and producing higher quality information (as the *wisdom* theory would suggest), may cause superficial investment decision.

The herding behavior model described by these authors could be explained simply as follow. Assuming that investors follow sequence investment mechanisms in which the follower, approaching the platform, is able to know who invested before him, but he could not *see* who have seen the project and decided not to invest. Assuming also that investors have not all the same information about the quality of the investment and that there are some that possess more information than others. In this case, information can be both positive or negative and investors do not invest if the information they are in possess are more negative than positive.

It is clear that the first investor approaching the platform will invest only if he has positive information in regards to the campaign. The second, instead, will invest not only if he has positive information on his own, but also if he has no information. In this case, indeed, he could infer those information from the investment already realized by the first investor. Differently, if he has negative information, he will not invest, without taking in consideration the positive information he could infer form the first.

The same principle is true for the third investor but with an important difference. Indeed, it is possible that he will invest even if he has negative information. This because, from the first and the second investment, the third can infer that there are more positive information than the negative that he may have. In this way, a simple deduction of positive information could prevail on more certain negative information. Moreover, the more are the investors that follow, the more is difficult to distinguish between

[119] This could be done publicly thanks to the presence of specific section in the equity crowdfunding platform
[120] Those are usually the ones published on the platform by the issuer itself and that, most of the time, according to the specific regulation of that country, are not subject to any regulatory body approval. In addition, usually the list of information that have to be published is not huge, in order to avoid high disclosure costs for the issuer.
[121] For more information please *see* ARMOUR, J. and ENRIQUES, L. (2017), p. 14-16

those who invested on the base of the positive information possessed and those who invested only on a *deduction* base.

This mechanism has two important consequences highlighted also by ARMOUR and ENRIQUES (2017). The first is that the creation of a "momentum" is fundamental for the success of equity crowdfunding campaign. This could also mean that platforms have a great interest in advising issuers in convincing a greater number of investors in participating as soon as the campaign is launched. The second is that this herding behavior will create a "*'bimodal' distribution of funding*".[122] An equity crowdfunding campaign could get a big support, and so succeeding, or very little and so failing. The direct consequence of this mechanism is resource misallocation that maybe be transformed in a reduction of potential return for investors.

3.3 Literary review and hypothesis development for Italian framework

Current literature [123] dealing with equity crowdfunding success drivers analysed the following aspects:

- **Funding target.** According to LUKKARINEN (2016) the definition of the funding target, i.e. the amount of money that issuers want to collect, is positively associated with the number of investors participating in the campaign although it is not significantly related with the amount raised. [124] The reason could be that investors will be more attracted by companies with higher target, because the more is the amount collected, the more are the possibility for the company to grow and to increase in value. In addition, high funding target attracts investors because, according to the All-or-Nothing model mechanism, this increases their trust in the fact that the project presented will be successfully developed.
- **Equity participation offered:** Both RALCHEVA (2016) and AHLERS (2012) recognized that the higher is the participation offered, the lower is the number of the potential investors. Indeed, this fact reduces attractiveness and trust of investors which may think that the issuer does not strongly believe in its success: if he had believed so, he would have retained a bigger slice of his company. Indeed, also according to the traditional principles of the agency theory, the higher is the participation retained by the promoter, the easier will be to align the interests of the crowd with the interests of the promoter itself.
- **Minimum investment.** LUKKARINEN (2016) also argue that the higher is the minimum amount needed to participate in an equity crowdfunding campaign, the fewer are the number of investors and the amount raised. This maybe because requiring potential investors to use a higher amount of liquid funds may discourage investment decision together with increasing difficulties for diversification of one's portfolio.
- **Presence of institutional investors.** Participation in an equity crowdfunding campaign of an institutional investor increases the success possibility of the equity crowdfunding campaign. [125] Retail

[122] ARMOUR, J. and ENRIQUES, L. (2017), p. 16
[123] The major works regarding success drivers of equity crowdfunding are the following: AHLERS G. et al. (2012), that concentrated his research on the Australian crowdfunding platform ASSOB; LUKKARINEN A., et al. (2016), that analyzed sixty campaigns published in the Finland platform Investdor between May 2012 and September 2014; and RALCHEVA, A. and ROOSENBOOM, P. (2016), that concentrated their research on 541 campaigns launched between January 2012 and March 2015 on the UK platform Crowdcube
[124] *See* LUKKARINEN (2016)
[125] *See* RALCHEVA et al (2016), p. 16

investors, indeed, could consider this as signal of the value of the presented project and infer positive information acquired by the institutional investor; they may argue that the institutional investor would not have invested without conducting a proper due diligence.

- **Campaign duration.** The duration of an equity crowdfunding campaign, that is to say, the number of days necessary to complete the fund collection is negatively associated with the number of investors, although not significantly related to the amount raised.[126] Indeed, the shorter is the duration the more the issuer could appear determined in carrying on the project and the more the investors will act fast, instead of postponing investment decision.
- **Intellectual property protection.** According to RALCHEVA (2016), forms of protection such as patents, trademarks and copyright participate in incrementing the possibility of success of an equity crowdfunding campaign. Indeed, one of the risk of going public is that the product and the business idea could be stolen and then developed by better financed firms. Protection, therefore, participates in transmitting the idea that the business presented has higher possibility of success.
- **Provisions of financial.** According to LUKKARINEN (2016) showing financial data in the pitch of the crowdfunding campaign is positively associated with the number of investors attracted. This, indeed, may be considered as a signal of credibility and capability, while their lack as dubious and unprofessional. [127] The major regulations do not require the issuer to expose those data. For this reason, they are easily available only if they are disclosed by the issuers. In particular, some platforms show in a clear way only the pre-money valuation of the company. [128] Usually, this is calculated on the basis of the percentage of the share offered and on the target amount, while the data and the procedure followed to made the calculation are not always made available by the issuer.
- **Presence of early investors.** The early presence of investors, convening credibility and reinforcing the confidence of following investors, is positively associated with the number of participant and with the amount raised. [129] According to what has been said, investors that do not want or that are not able to perform a proper due diligence may take investment decisions supposing that at least some of the other has already verified the published information. This is more true, considering also the number of investors that only after few days from the launching of the crowdfunding campaign decide to participate in the collection.
- **Social media networks.** Another finding of LUKKARINEN (2016) is that the ability to post and to share its campaign on social network is strongly associated with a higher number of investors and of the amount raised by the issuer.
- **Team composition.** Education, past experience and age of the people composing the operating team of the issuer are strongly taken in consideration by potential investors. So, team composition is strongly related with the campaign success according to AHLERS (2012). Indeed, in particular, the

[126] *See* LUKKARINEN (2016)
[127] *See* LUKKARINEN (2016)
[128] 18 on 22 Italian platforms clearly expose pre-money valuation in the equity crowdfunding dedicated page.
[129] *See* LUKKARINEN (2016)

education and the past experience of the team will be a clear signal of the good possibility of success of the presented project. [130]

In line with the aim of this paper, the drivers that may be taken in consideration by and that may attract an Italian equity crowdfunding investor will be considered in correlation with the success of the campaign. [131]

From an accurate selection of the determinants enlisted by the current literature and in line with what has been exposed above and to the characteristic of Italian situation, the following are the simple determinants (some "economic" and others "social") whose influence on the success of an equity crowdfunding campaign in Italy will be analysed in the following paragraphs.

- **Equity offered.** It represents the minimum participation offered by the issuer to the potential investors. This variable has been selected in order to test the conclusion of RALCHEVA (2016) and AHLERS (2012), according to which an higher participation offered has a negative impact on the result of the collection. The first hypothesis for this reason is:

H1: A higher participation offered has a negative impact on the success of the equity crowdfunding campaign.

- **Social interaction.** It is represented by the how much a crowdfunding campaign has been shared through social networks. The campaign is indeed presented with a dedicated video published in the platform. The video can be shared using issuer social networks: the more it is shared, the more are the views that the video collect. [132] For this reason, the second hypothesis is that:

H2: A higher views of the presentation video has a positive impact on the success of the equity crowdfunding campaign.

- **Pre-money evaluation.** It is the easiest financial data in terms of accessibility and comprehensibility from a retail investor perspective. Indeed, pre-money evaluation of the issuer is always exposed in the page dedicated to each crowdfunding campaign. It gives immediately an idea of the value of the company that is offering its shares. It is generally calculated considering the equity offered and the funding target, although it is not subject to any review and usually the data that conducted to that results are not made available by the company. This in order to test the third hypothesis that is:

H3: A higher value of the company has a positive impact on the success of the equity crowdfunding campaign.

- **Funding target.** It is one of the most evident financial data that, together with pre-money valuation and funding target, could be considered by investors. The funding target is the amount of money that need to be collected so that a campaign could be concluded with success. In order to test if the

[130] *See* AHLERS (2012), p. 23

[131] Success will be defined in terms of *funding ratio*, that is to say the percentage of the funding target reached by the promoter of the campaign. Indeed, in equity crowdfunding it possible to overcome the defined funding target. This until the reaching of the so called funding limit. For this reason, campaign with a funding ratio of less than 100% will be considered failed. Contrary, the difference between the funding ratio and "100%" can measure the success of the campaign.

[132] This appears to be one on the most reliable way to measure sharing of the "only" equity crowdfunding campaign. Indeed, considering other social network related index, such as Facebook pages likes or Twitter followers, this may distort the results because those "likes" and those "follower" could be collected for reasons that are not associated with the crowdfunding campaign.

conclusion of LUKKARINEN (2016) could be valid not only in terms of investor participation, but also in term of funding ratio, the fourth hypothesis will be:

H4: A higher funding target has a positive impact on the success of the equity crowdfunding campaign

- **Self-disclosed financial information.** As anticipated, regulation do not provide a specific set of financial data that must be published in an equity crowdfunding campaign. For this reason, provisional data on turnover, profits and costs are disclosed only on a voluntary base. The relation between the information disclosed and the success of the campaign will be analyzed and tested with this fifth hypothesis that is:

H5: Disclosing voluntarily precise financial data has a positive impact on the success of the equity crowdfunding campaign

- **Remuneration and exit strategies.** What above said for financial disclosure it is also true for remuneration or exit strategies. They represent how investors could monetize their investment. In general they are: (i) distribution of dividends, [133]; (ii) buy out from another company; and (iii) IPO. Also their relation with the success of a campaign will be highlight in the sixth hypothesis that is:

H6: The promise of a remuneration or of an exit strategy has a positive impact on the success of the equity crowdfunding campaign

- **Number of investors after the first 5 and 10 days from the launching of the campaign**. This variable should make possible the validation, in the concrete case, of herding behaviour mechanism described. Here, it will be proposed a little variation to the assumption made by AHLERS (2012) on participation of early investors. The difference will be that AHLERS (2012) used this variable in crowdfunding campaign adopting the mechanism of the funding rounds, that is to say, in which the issuer could promote another campaign immediately after a previous successfully concluded.[134] But, being the funding rounds mechanism not used by Italian equity crowdfunding platforms, the attempt will be to test this principle considering the number of investors that decide to invest after the first 5 and after the first 10 days from the beginning of the campaign. The assumption is that each campaign is preceded by a long preparation, including also some marketing. This implies that before going public, the issuers had some investors ready to participate in the crowdfunding campaign that will invest as soon as the campaign is published on the platform. Therefore, the last hypothesis is that:

H7: A higher number of investors after the first five and ten days from the publishing of the campaign has a positive impact on the success of the equity crowdfunding campaign.

Other potential determinants have been excluded for the impossibility to be tested in our case study or for lack of data available until now. For example, although it would have been interesting, it is not possible to consider the effect of the minimum participation on the success of an equity crowdfunding campaign. The reason is simply that the 95% of all the campaign analysed had the same minimum

[133] Although according to Italian regulation ISU and I-SME cannot distribute dividends before five years from their incorporation.
[134] In other words, the issuer in those platforms has the possibility to conduct a sequence of more than one equity crowdfunding campaign. The access to the following it is subordinated to the conclusion with success of the ones before. It this ways, the issuer has the possibility to offer first low percentage of its share asking for a fewer amount of money initially. If he concludes with success the first collection, the issuer could start "another round" where he could offer more shares at a price that, proportionally, is higher than the one of the previous.

amount of 250 €. The same reason is valid for the participation of an institutional investors. The data, indeed, will be distorted because of the provision of the Italian regulation that forces institutional investors participation. The same principle applies to "investment speed" that is to say how much funding rounds has been chosen by the issuers. This data cannot be considered because this model it is not used in Italy. Finally patents, grants, or team's education are not always displayed in equity crowdfunding platforms and, in particular, in the data set that we are going to consider for our case study there is little incidence of them. For instance, only one of the 27 analysed campaign declared to have a patent for its product.

The next chapter will test and analyse the reported hypothesis, to define if information coming from study conducted in country in which equity crowdfunding is more developed are true also for Italian equity crowdfunding. This will led to recognize which drivers are taken in consideration by an Italian equity crowdfunding investor.

3.4 Descriptive statistics

The data set contains data of 27 crowdfunding campaigns published and concluded on CrowdfundMe from 2014 to 2017. The total amount collected with success is € 3.49 million [135] while 1.955 is the number of participating investors with no. 2.281 share subscription. [136]

On CrowdfundMe, of the 27 published campaigns 18 has been successfully closed while 9 failed to reach the funding target. The average amount raised by the 18 successful campaigns is € 193.820,78, while the average number of participating investors is 100. Considering also the failed campaigns, the average amount collected by the 27 analysed campaigns is € 136.292,05 and the average number of participant investors is 72. The greatest amount collected by a single campaign is € 391.500,00 while the greatest number of participant investors is 192. Only 3 companies offered only B shares [137] and all the four companies that published incomplete documentation or errors noted by the investors in the Q&A section failed. The successful projects analysed went over-funded by an average rate of 236%, with the maximum overfunding volume reached of 400%. To confirm what already said by ARMOUR and ENRIQUES (2017), the unsuccessful projects where very far from reaching the target amount, with a low average funding of 17%, with only 2 failed campaigns on 9 collecting more that 30% of the requested funds.

	No. observation	Sum	Average	Min	Max
	General				
Amount	27	€	€	€	€

[135] The total collection, including money regarding failed projects is € 3.679.885,22. It useful to remember that when an equity crowdfunding campaign is concluded without success, money invested goes back to the relevant investors.
[136] Only data regarding investors are updated to the 10 January 2018 with the aim of giving an idea of the importance of the selected platform.
[137] With B shares the platforms refers to shares without voting right.

collected		3.679.885,22	136.292,05	1.000,00	391.500,00
Participant investors	27	1955	72	1	192
Funding ratio	27	--	163%	1%	400%
	Successful				
Amount collected	18	€ 3.488.774,00	€ 193.820,78	€ 63.000,00	€ 391.500,00
Participant investors	18	1794	100	30	192
Funding ratio	18	--	236%	100%	400%
	Failed				
Amount collected	9	€ 191.111,22	€ 21.234,58	€ 1.000,00	€ 88.000,00
Participant investors	9	161	18	1	38
Funding ratio	9	--	17%	1%	44%

Figure 15 - Descriptive statistics

With regards to sectors or industries in which the companies of the data set operate, some of the consideration made in the market analysis of previous paragraphs could be confirmed. Indeed, in the list of the top five industries and sectors funded, ICT is in the top five. Peculiar of Italian framework it is the fact of finding also 5 on 27 companies operating in the Food and Beverage sector, while an important position is occupied by Tourism and Sharing economy.

In the considered market, only a modest percentage of the presented projects could be considered as first mover. Those were 6 on 27, representing the 22% of the total data set. Moreover, first mover companies have a positive success rate of 66,6%. [138]

[138] Considering that the data set contains only 6 "first mover", those data has been considered too few to create and study a dedicated hypothesis as the one presented in next paragraph.

Sector	No. of observation	Percentage of success
Food and Beverage	5	60%
ICT	5	60%
Sharing Economy	4	100%
Tourism	3	100%
Real Estate	2	50%
Other sectors	8	50%
Total	27	66,6%

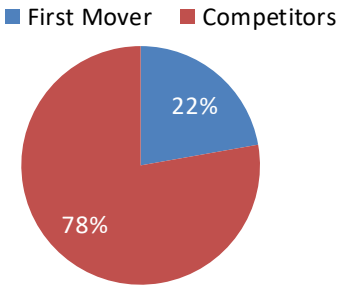

Figure 16 - Sectors and competition

Being no current obligation in equity crowdfunding regulation to show financial information, those are not always disclosed by the issuer. Specifically, it is necessary to distinguish between financial data that are always shown because they are requested by the platform, and financial data that could be only voluntarily disclosed. In the first group, there are very basic information such as amount of equity offered, target ratio and pre-money valuation of the company. In the second group, instead, there are usually provisional data on turnover, profits and costs that are disclosed only on a voluntary basis. With respect to this second group, less than half of the considered project (14) disclosed more specific financial data than the one requested by the platforms. Finally, another important missing "mandatory" information regards the provision on which kind of remuneration could be acquired by a single investor. In other word, which exit strategies company intends to adopt in the future. While in other important international platforms there is usually a section dedicated to it [139], nor the regulation nor the considered platforms required the issuer to show which exit strategy has been considered by the promoting team. Indeed, information on this regards could be often found out only in the Q&A section, being disclosed only on investor request. [140] In the analyzed data set only 10 companies on 27 gave such information. Even though some companies published more than one exit proposal, the "buy out" it is the most common way out proposed by the issuer, being present in the 33% of the campaigns. The provision of a future IPO or of dividend distribution is less common, presented both by only 2 companies on 27.

Investment remuneration	Absolute frequency	Relative frequency
Dividends distribution[141]	2	7,4%

[139] See for example the campaign descriptions of UK platform Crowdcube.
[140] For the purpose of this dissertation no difference has been made on the fact that the information is given on investors request or not.
[141] It is important to remember that ISU and I-SME could not distribute dividends until 5 years from their incorporation.

Buy out	9	33,3%
IPO	2	7,4%
No provisions	14	51,9%

Figure 17 - Presence of exit strategies

3.5 Data analysis

In this section, data collected will be analysed with the final purpose of testing the hypothesis anticipated and formulated. The considered data set is based only on 22 campaigns of the 27 described above. Indeed, to study the correlation between funding ratio and, respectively, equity offered (H1), video view (H2) and pre-money valuation (H3) it was necessary to clean the data set from the presence of 5 outliers. The following table shows the result of the correlation matrix between all of the considered variables without a dichotomous value. As Figure 18 shows, apart from the relation between funding ratio and number of participant investors, correlation between data presented is not very strong.

	Funding Ratio	H1.	H2.	H3.	H4.	H7(a)	H7(b)	H7(c)
Funding Ratio	1							
H1.	-0,46	1						
H2.	0,43	-0,02	1					
H3.	0,20	-0,62	-0,07	1				
H4.	-0,31	0,28	-0,24	0,39	1			
H7(a)	0,31	-0,04	0,21	0,25	-0,09	1		
H7(b)	0,37	0,01	0,11	0,22	0,07	0,93	1	
H7(c)	0,86	-0,42	0,35	0,22	-0,14	0,21	0,36	1

Figure 18 - Correlation between selected variables and funding ratio.

A more complete analysis of the relation between the funding ratio and the selected drivers will now follow, in order to analyse the hypothesis presented to identify the drivers followed by an equity crowdfunding investor before making investment decisions.

H1: A higher participation offered has a negative impact on the success of the equity crowdfunding campaign.

The first hypothesis analysed comes from agency theory's principle. According to this theory, in order to make the agent work in the interest of the principal, avoiding moral hazard and bad behaviours, it is necessary to align agent and principal interests. Applying this principle to equity crowdfunding, the issuer should be interested in retaining for him a great part of his company if he think that the value of the

company will increase in the future. So, when this not happen investors may infer that the chances the company will increase in value are not high and may decide not to invest.

Notwithstanding the theory, this hypothesis finds little evidence in the analysed data as already anticipated with the correlation matrix presented in Figure 18. Indeed, correlation between equity offered and funding ratio it is only -0,46. The result suggest the existence of an inverse relation between equity offered and funding ratio, although this is not strong. Indeed, the dispersion of data around the line is still evident, explaining why the correlation remains quite low.

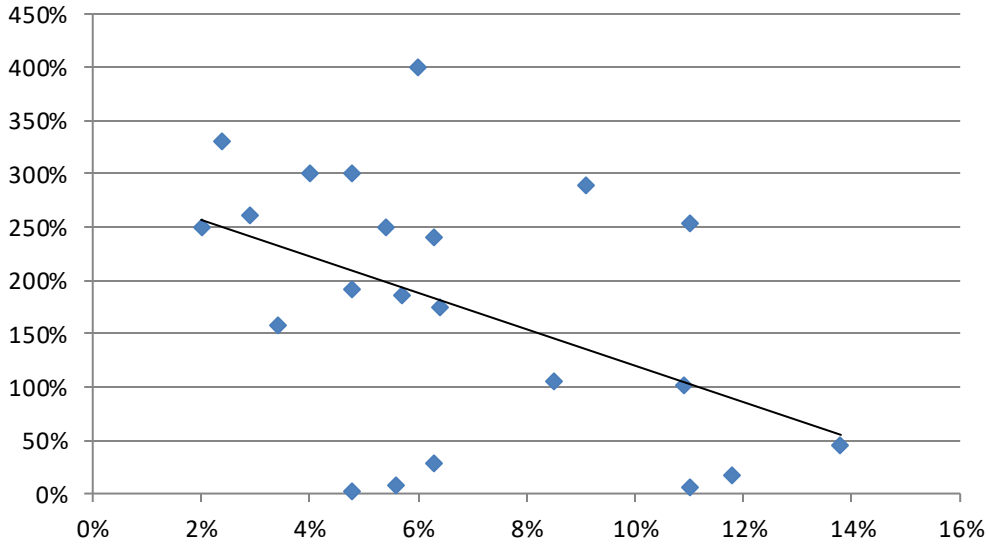

Figure 19 - Relation between funding ratio and equity offered.

From the above it possible to conclude that the first considered hypothesis may find some demonstration in the data proposed, although the correlation between those data it is not so strong. This means that the amount of share offered is a financial information that, being one of the major financial information investors could easily have access before investing, is taken in consideration by the investors, although it is not so significant to be used to attract investors participation.

H2: A higher views of the presentation video has a positive impact on the success of the equity crowdfunding campaign.

Figure 20 below presents the relation between video views and funding ratio. As confirmed by the correlation value (0,43) reported in the matrix of Figure 18, the analysis of the data suggests a positive relation between these two variables.

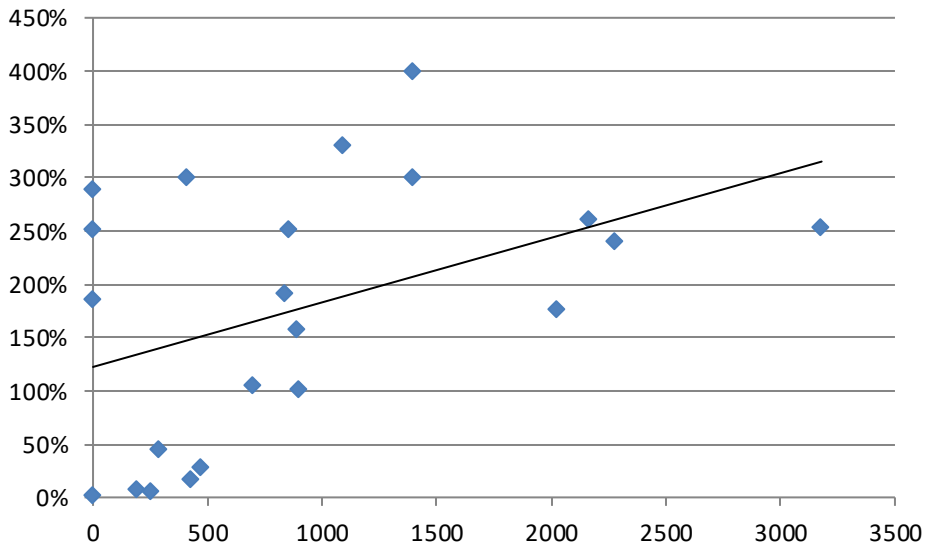

Figure 20 - Relation between funding ratio and views of the presentation video

Notwithstanding the value of the correlation found out it is not so high, it is still possible to make at least some important empirical observation on the direct relation emerged. For instance there is a concentration of failed campaign under the 500 views, while the higher concentration of successful collection, is concentrated between 750 and 2250 views.

These results may suggest that although data may be still too few to recognized a strong relation between views of the presentation video and funding ratio, there is a minimum threshold of visibility that need to be overcome (750 in our case) to increase the probability of success of a crowdfunding campaign. Social interaction, although it may be not fundamental, remains an important driver to increase attraction of investors of an equity crowdfunding campaign.

H3: A higher pre-money valuation of the company has a positive impact on the success of the equity crowdfunding campaign.

Figure 21 below shows the relation between pre-money valuation and funding ratio of each campaign. However, also form the presented data it is not possible to highlight a significant relation of the two considered variables, being the correlation value of 0,20. Indeed, the major parts of the considered campaigns (18 of 22) had a pre-money valuation under or equal to € 2 million and, in this group, 12 of 18 (the 66%) has been concluded with success, while only 6 of 18 (the 33%) failed.

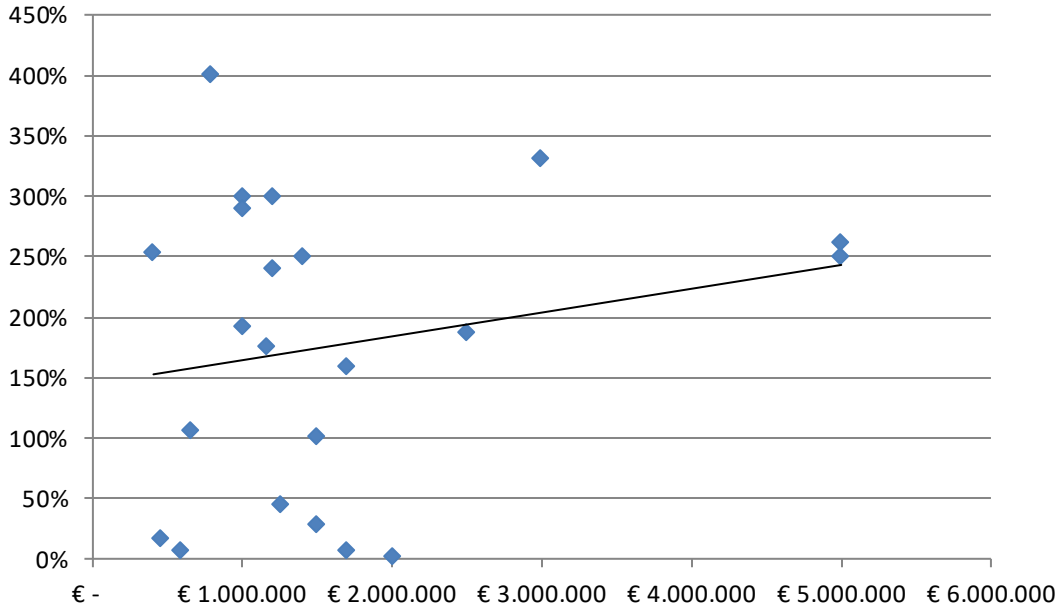

Figure 21 - Relation between pre-money valuation and funding ratio

From the above results it is possible to conclude that the third hypothesis do not find enough evidence in the case study of this dissertation. This may suggest that high level economic drivers, such as the value of the company, are not so effective in determining investors participation. As already recognized under hypothesis H1, high level financial information that are always disclosed to investors, although they may be important, do not play a fundamental role in determining investor's interest in a specific campaign.

H4: A higher funding target has a positive impact on the success of the equity crowdfunding campaign

Figure 22 below shows the relation between the amount of money sought by the issuer and the success of the campaign in terms of funding ratio. The aim of this hypothesis is to demonstrate that, also partially in contrast with the research conducted by LUKKARINEN (2016), investors will be attracted by the fact that a company look for a high amount of money. Indeed, in coherence with some principles highlighted on All-or-Nothing dynamics, the fact that the issuer set higher minimum target should be considered in a better way by investors, giving them more trust in the fact that the project would be carried on with success.

However, as reported in the correlation matrix of Figure 18, not only the relation between these two set of data is not very strong, but, in addition, they are inversely correlated (correlation value is -0,31).

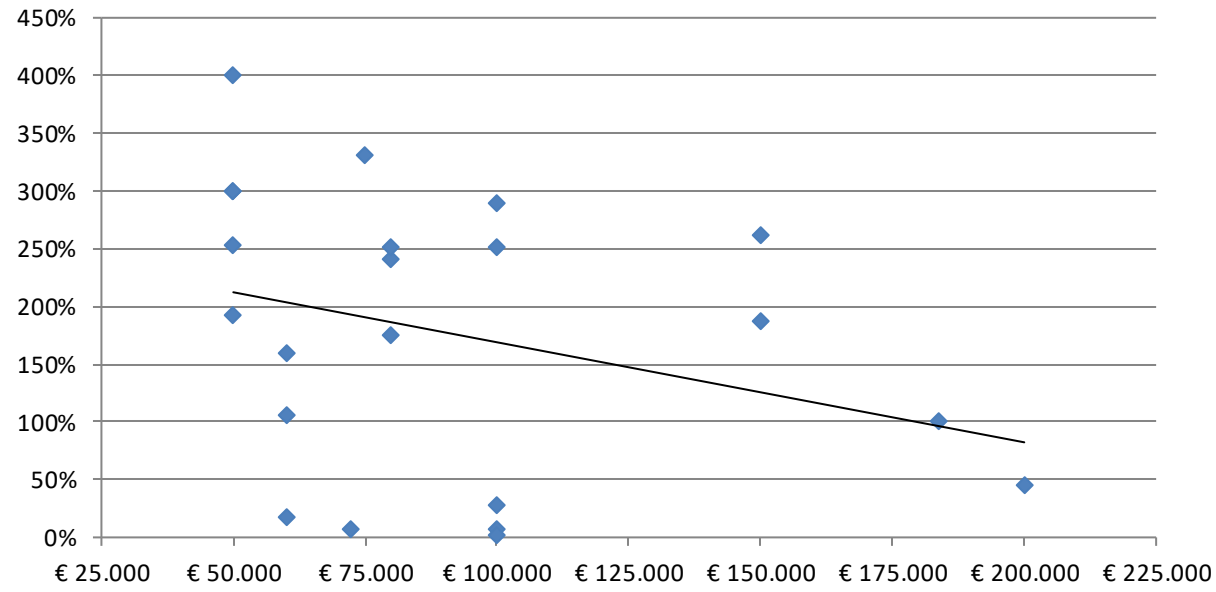

Figure 22 - Relation between funding target and funding ratio

This result will suggest that the formulated hypothesis seems not demonstrated, in full accordance with the research of LUKKARINEN (2016), according to which there is no strong correlation between funding target and funding ratio.

A simple explanation for the result of the reported analysis is that a lower amount of money could be easier collected than a higher one. This could be an interesting driver considered by investors that may prefer to invest in projects with higher chance to reach their funding target, and so having all the necessary resource to be developed and became remunerative. This means also that theory on All-or-Nothing mechanism do not find enough application in the concrete case. [142]

H5: Disclosing voluntarily financial data has a positive impact on the success of the equity crowdfunding campaign

As anticipated in the previous paragraph, in general equity crowdfunding investors give importance to voluntary information disclosure. Indeed, as already reported while describing the dataset, lack of basic information is always related with the failure of the campaign. The aim of the considered hypothesis is to test if the same principle is also true with regards to disclosure of not-mandatory financial information.

The relation between disclosure of more financial information, success and funding ratio, is exposed in the table of Figure 23 below.

Sector	Absolute frequency	Relative frequency	Rate of success	Rate of failure

[142] This is a reference to the fact that All-or-Nothing campaigns are riskier for the promoter, because he bear all the risks related to the not reaching of the funding target, but at the same time let him to gain more confidence and trust by its potential investors

Presence of other financial data	12	54,5%	66,6%	33,3%
No other financial data showed	10	45,5%	80%	20%
Total	22	100%		

Figure 23 - Relation between disclosure of additional information and success

In particular, Figure 23 gives aggregate important empirical information, highlighting the relation between information disclosure and presence or non-presence of specific financial data. Indeed, on the 22 campaigns considered, only 12 decided to show specific financial data regarding profit or revenue forecasts. In this group, the 66,6% succeeded, while the group of non-disclosing companies presents a higher success rate (80%). To explain these unintuitive results, it is necessary to considered that equity crowdfunding environment is composed by SMEs and startup, companies that usually do not have the resource to hire professional consultant to review information published. [143] This means also the impossibility to validate data published, in a way to avoid errors of incautious data disclosing. Therefore the fact that disclosing companies presents a lower success rate if compared with the "non-disclosing", simply highlights the importance of disclosing *correct* data. In other word, disclosures activities does not *per se* increase success rate if this is not properly carried on. This because, if the data disclosed are not correct or they do not reflect investors expectation, this may clearly determine the failure of the campaign.

The assumption demonstrates that investors give importance and value to financial information disclosure, although this does not imply that for the sole fact of having disclosed some data the company may attract more investors. Indeed, investors gives importance to the fact that the information disclosed are correct. If data shared are "bad", or simply does not reflect investors expectation this may create a boomerang effect for the company. The aforementioned *wisdom of the crowd* could help in detecting those bad information, influencing the success of the campaign.

H6: The promise of a remuneration has a positive impact on the success of the equity crowdfunding campaign

On the 22 campaigns composing the data set, only 8 decided to present at least one exit strategy to its investors. In this group, only 2 issuers decided to present two exist strategies, while no campaign presented all three of them.

Figure 24 shows a positive relation, in terms of success rate, for companies that decided to show at least one or two exit strategies. Indeed, the success rate of the former is 87,5%; the success rate of the

[143] Indeed, from in the consider dataset, only one company disclosed the consultant hired by the team to have support for the equity crowdfunding campaign.

latter, is, instead, of 100%. However, this rate it not so far from the one on companies that do not present a way out. Indeed, those companies had a success rate of 65%.

Sector	Absolute frequency	Relative frequency	Rate of success	Rate of failure
Presence of at least one exit strategies	8	36,3%	87,5%	12,5%
Presence of two exit strategies	2	9,1%	100%	0
Presence of no exit strategies	14	63,7%	64,3%	35,7%

Figure 24 - Relation between presence of exit strategies and success

The result highlighted suggests that giving information on possible exit strategies it is very important although it may be not fundamental as demonstrated by the still high success rate of company not giving information on possible way out. However, this does not means that the presence of exit strategies it is not a driver to attract investors. Indeed, absence of exit strategies could increase probability of failure as demonstrated by the fact that 4 on 6 of the company that failed had not given to the investors information about possibilities to gain from the investment completed.

H7: A higher number of investors after the first five and ten days from the publishing of the campaign has a positive impact on the success of the equity crowdfunding campaign.

As a confirmation of the importance of "crowd" dynamics in equity crowdfunding, there is a strong correlation between number of investors and success of the campaign. To make clearer this relation, the analysis has been conducted in three different moments of each campaign: after the first 5 days (H7(a)), after the first 10 days (H7(b)) and at its end (H7(c)). Figures 25 below shows the correlation between total number of investors adhering to each of the 22 campaigns composing the data set and the funding ratio of each of them. It is possible to observe that there is a clear relation between the number of investors and the total amount raised. This could imply that the more are the *single number* of investors that participate in a crowdfunding campaign and the more are the possibilities to outreach the minimum target.

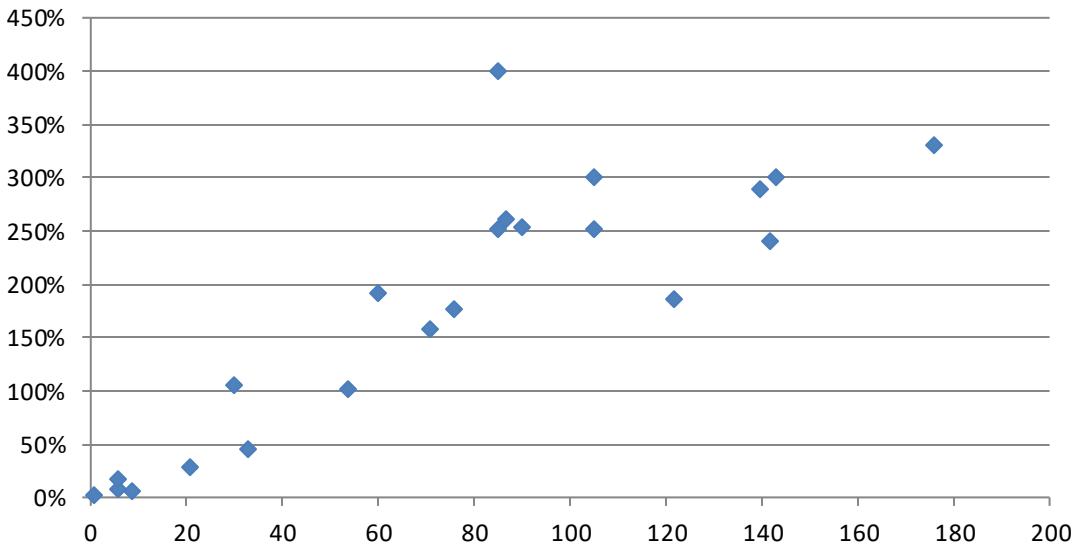

Figure 25- Number of total investors (H7(c)) that invested in the company in relation with the funding ratio.

But, what is also possible to highlight from the reported data is that the more are the investors that participate in the first days from the launching of the campaign and the more are the possibilities to succeed. Indeed, as shown in the Figures 26 and 27 below, the major parts of the failing campaigns were unable to attract more than two investors within the first 5 days from the launching of the campaign, or more than three after the first 10 days. Contrary, issuers that was able to attract more than five investors after only the first 5 days then succeeded and the same it is true for the other that attracted more than 10 investors after the first 10 days.

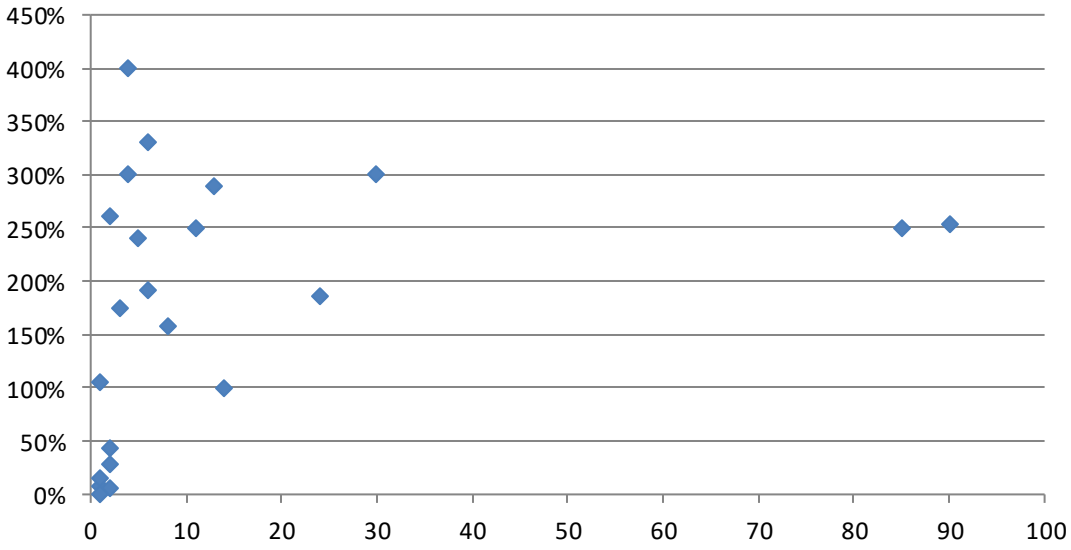

Figure 26- Number of investors that invested in the company within the first five days from the beginning of the collection

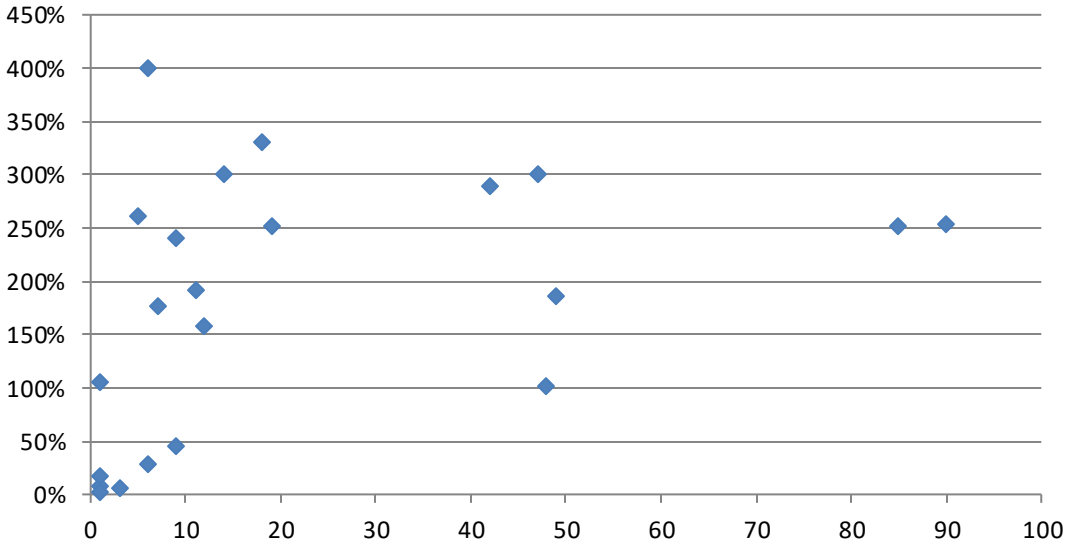

Figure 27- Number of investors that invested in the company within the first ten days from the beginning of the collection

The results presented above could be considered as valid proof of the presence of herding behaviour in attracting investors of equity crowdfunding campaign. This is a confirmation of the existence, beside its financial nature, of another one, more "social", determined by direct crowd participation.

3.6 Final consideration and conclusion

After the data analysis conducted above, it is possible to recognized at least three different nature of equity crowdfunding. The first is the *financing* nature that is connected with its function as a financing instrument for SMEs and for startups, as it is has been demonstrated in the first part of this paper, also considering its inverse relation with the established banking sector.

The second is equity crowdfunding *financial* nature, that is linked to the fact that it is based on the subscribing and trading of companies shares. To this regards, in the first part of this paper the direct relation with financial markets has been described while in the second the importance of sharing precise and correct financial information to enhance success probability has been reported.

The last one is equity crowdfunding *social* nature, connected with the most "disintermediated" (and so direct) crowd participation. From this point of view equity crowdfunding, in some cases, is considered as an opportunity to directly invest in projects that are near to investor knowledge, giving him also the possibility to be an active part of a community. However, this nature implies also negative aspects such as the perils linked with herding behaviour that may cause funds misallocation.

In order to enhance equity crowdfunding market development, it is necessary to balance and to oversee all these different natures. This role, could be assigned only to *regulation* that should always have as a main purpose the reduction of risks for investors avoiding the imposition of excessive costs on issuers and platforms. This could be done, for instance, by inducing issuers to disclose more financial data, in a way that investors may take more precise and informed decisions. To do so, in order to avoid

the introduction of new costs for issuers, a valid solution could be to provide a mechanism of grants or tax relief to compensate the *disclosing issuers* of the costs of hiring specific consultants.

In addition, from the describe natures, it is clear that there are two major classes of drivers that attracts investors participation. One is composed by *financial drivers*, while the second contains *social drivers*. This means that investors decisions making process will depends on which of the two set of drivers will be preferred in the concrete case. In this way, an investment could be determined by a business model analysis or it could be the result of a herding behavior.

The analysis conducted in this paper provides evidences of the fact that at the current state of the art the so-mentioned *social drivers* may prevail on the *financial drivers*, as it has been demonstrate considering the correlation between funding ratio and financial drivers (*see* H1 and from H3 to H6), on the one hand, and social drivers (*see* H2 and H7) on the other. Financial data are important for the investors, although social information have a stronger correlation with the success of the campaign.

But the predominance of social drivers on financial ones, may cause some risks for investors. As it has been demonstrated, although social mechanism could be useful to identify fraud attempt or information incoherence, they could also bring misallocation of funds. Indeed, it has not been demonstrated that, in absence of frauds or incoherencies, social drivers makes investors choose always the more profitable project. This will be impossible until detailed financial information will not be available.

To solve this potential risk of misallocation of funds, the more efficient solution is to impose a minimum set of financial information that need to be disclosed and that will be validated before the launching of an equity campaign.

In this way, not only investors may take more efficient decisions but also the *wisdom of the crowd* will help in enhancing information quality, notwithstanding the not so deep level of disclosure that could be imposed to the issuer to not increase disclosure costs. In this sense, the crowd system, that before could be considered as a source of peril, could now function as a *catalyst* to turn low level financial information in high quality one.

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How Do Firms Choose Legal Form of Organization?

Rebel A. Cole
Florida Atlantic University
Boca Raton, FL 33431
phone: (561)-297-4969
fax: (561) 297-2956
e-mail: coler@fau.edu

Tatyana Sokolyk
Brock University
St. Catharines, ON
phone: (905) 688-5550 ext. 4781
fax: (905) 378-5723
e-mail: tsokolyk@brocku.ca

Abstract: In this study, we analyze the firm's choice of legal form of organization ("LFO"). We find that only about one in three firms begins operations as a proprietorship, while almost as many begin as limited liability companies and as corporations. Moreover, this distribution is remarkably stable over the first seven years of the firm's life. Fewer than one in ten firms changes LFO during its first seven years. Those that do change LFO disproportionately move to a more complex form, primarily from proprietorship to a form with limited liability. Our analysis of the firm's initial choice of LFO reveals that a firm chooses LFO based upon factors that include access to capital markets, tax consequences, and personal liability and risk exposure. At start-up, the entrepreneur chooses a LFO that can accommodate the expected future complexity of her firm.

Key Words: corporation, entrepreneurship, Kauffman Firm Survey, LLC, legal form of organization, organizational form, partnership, proprietorship, small business, start-up

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How Do Firms Choose Legal Form of Organization?

1. Introduction

One of the first decisions any entrepreneur has to make is the choice of the legal form of organization ("LFO"). The five available LFOs (sole proprietorship, partnership, Limited Liability Company, S-corporation, and C-corporation) differ substantially in terms of the firm's ability to raise capital, tax considerations, and owner(s) exposure to risk and personal liability. The choice of initial LFO is undoubtedly related to the firm's and entrepreneur's needs and exposure to these considerations at start-up. This choice also alters the way the newly established firms behave, including willingness to take risks, obtaining financing, and managing expenses.

In this study, we examine several fundamental questions related to the initial LFO choice. Why and how do entrepreneurial firms initially choose one organizational form over another? Do entrepreneurial firms change organizational form, switching, for example, from proprietorship to partnership, LLC or corporation? What factors influence the entrepreneur's choice of initial LFO and how does this choice relate to future operational decisions and outcomes? These are fundamental decisions facing any entrepreneur, yet very little research and analysis has been done on the topic.

We utilize data from the Kauffman Firm Survey ("KFS") and its annual follow-ups to examine the link between the expected complexity of the firm and the choice of initial LFO. The KFS tracks a panel of 4,928 new businesses established during 2004, providing information about the firm in the year of its inception and, for those firms that survive, providing information about the firm in each of seven subsequent years—2005 – 2011. Because the KFS collects information on each firm's legal form of organization in each survey year, we can identify firms that change their LFO.

Our analysis reveals that a firm's choice of LFO is largely set in stone at inception, in contradiction to the life-cycle theory of the firm. Only about one in three firms begins life as a proprietorship, while almost as many begin as LLCs and as corporations. Moreover, this distribution is remarkably stable over the first seven years of a firm's life. Fewer than one in ten firms changes LFO during these first seven years, but those that do disproportionately move to a more complex form, primarily from proprietorship to a form with limited liability.

Our analysis of the firm's initial choice of LFO reveals that a firm is more likely to choose a more complex LFO to accommodate greater expected firm's complexity, proxied by employment size, comprehensive employee benefits plans, use and extension of trade credit, use of business credit financing, and obtaining intellectual property rights. A more complex initial LFO also is more likely when its primary owner is more educated, has a higher number of prior start-ups, and puts more working hours into the firm. These findings suggest that firms' owners endogenously choose the initial LFO that is best suited to pursue the owner(s) growth objectives and complexities of the business.

This study makes an important contribution to the literature by providing new evidence on: (i) a firm's initial choice of LFO at start-up; (ii) the determinants of a firm's initial choice of LFO; and (iii) the incidence of changes in LFO during the first seven years of a new firm.

The rest of our paper is organized as follows. Section 2 describes various LFOs, emphasizing the differences in terms of the firm's ability to raise capital, tax considerations, and owner(s) exposure to risk and personal liability. Section 3 provides review of related literature. Section 4 develops hypotheses. Section 5 describes data and methodology, while Section 6 presents the results of empirical tests. Section 7 concludes.

2. Different Legal Forms of Organization

Obviously, there are advantages and disadvantages to each organizational form and the entrepreneur must calculate the costs and benefits of these advantages and disadvantages. We explore these tradeoffs below.

2.1. Proprietorship

The proprietorship is the simplest LFO—one that has no separate legal existence from its owner. A proprietorship is simply a person operating a business under her own name or a trade name ("doing business as"). In general, there are no legal requirements to operate a proprietorship. Consequently, the law treats the legal obligations of the proprietorship as those of the owner. Also, because there is no separate legal entity, the profits and losses of the business flow through to the owner, as do any legal liabilities. The owner is personally responsible for all legal obligations of the firm and her personal wealth is at risk. A proprietorship can consist of, at most, two persons—a husband and wife filing a joint tax return. Otherwise, a proprietorship has only one owner, and, therefore, is limited in the amount of equity capital by the personal wealth of the proprietor. The life of a proprietorship is limited by the life of the proprietor; the firm dies with the owner. Finally, partial ownership shares do not exist for a proprietorship; the firm must be bought or sold in its entirety.

2.2. Partnership

In order to deal with many of the limitations imposed by the proprietorship LFO, the partnership was established as a legal business entity whereby two or more persons enter into a legal contract in which the partners agree to operate a business and share the profits from that business. There must be at least one general partner, who bears unlimited legal liability for the firm's legal obligations, and there may be one or more limited partners, who enjoy limited

liability if they do not materially participate in the operation of the business. The partnership enables a firm to raise equity capital in excess of that of a single owner; the equity in a partnership is limited by the combined personal wealth of all partners. As with a proprietorship, the profits and losses of the firm pass through the firm to the partners, but on a pro rata share based upon the partnership agreement. As with a proprietorship, there is a limitation on the life of a partnership; it ends with the death of the last general partner. However, ownership of a partnership is divided into shares that can be bought or sold.

2.3. Corporation

A corporation is the most complex LFO. A corporation is a separate legal entity from its owner(s) and, as such, is recognized as a "legal person" that can enter into contracts and enjoys all the legal rights of a "natural person." Consequently, all owners of a corporation enjoy limited liability. In sharp contrast to a proprietorship and partnership, a corporation enjoys an unlimited life. There are two primary types of corporations in the U.S.—the C-corporation and the S-corporation.

C-corporation

C-corporations are subject to corporate income tax at both federal and state levels. Any earnings distributed to shareholders as dividends are subject to a second level of taxation at personal income tax rates. Although this double tax often is cited as a reason not to conduct business as a C-corporation, it is just one factor to consider. Others may outweigh it, and careful tax planning can minimize this disadvantage.

One way the corporation can reduce the double taxation of corporate income is to pay large salaries to shareholders who are managers or employees of the firm. Because compensation is a valid business expense, a C-corporation can deduct compensation in its calculation of taxable

income, avoiding the corporate tax on these distributions. However, the IRS imposes limitations on this practice by setting rules on what is considered reasonable compensation; excessive compensation can be reclassified by the IRS as a dividend distribution that is subject to the corporate tax plus penalties.

C-corporation's shareholders may postpone the double tax if earnings are reinvested in the business rather than paid as dividends. In this case, retained earnings are taxed only at the corporate level. The amount of earnings retained, however, is effectively limited by the accumulated earnings tax. It also is important to remember that shareholders will pay tax if the earnings eventually are distributed or if corporate assets are sold and the corporation is liquidated.

When corporate assets are sold, shareholders will pay a capital gains tax on the proceeds of the sale. If a tax-free exchange of stock occurs instead of a sale, owners will not pay tax unless they sell some of the shares received in the exchange. States generally do not offer favorable rates on capital gains.

Because some state corporate income tax rates are higher than individual rates, a business organized as a regular corporation may pay higher state taxes than if it is organized as a partnership or S-corporation. However, this difference may not be significant in the few states that tax unincorporated businesses.

S-corporations

An S-corporation is a firm that elects special tax status as defined by Subchapter S of the Internal Revenue Code. The S-corporation was created in 1958 to provide tax relief primarily to small privately held firms. An S-corporation requires the same corporate formalities as a

C-corporation, including articles of incorporation, a board of directors, an annual shareholders' meeting, corporate minutes and shareholder votes on major corporate decisions.

S-corporations are subject to a number of restrictions that do not apply to C-corporations, including a limit to one class of stock and a limit on the number of shareholders. Originally, this shareholder limit was set at 10, but subsequently was raised to 15 in 1976, to 25 in 1981, to 35 in 1982, to 75 in 1996 and to 100 in 2004. Both new and existing corporations may elect S-corporation status.

The major difference between a C-corporation and an S-corporation is that S-corporation income "passes through" to its shareholders so that it is subject to a single level of taxation—at the personal level. Its income, whether or not distributed, is passed through to shareholders on a pro rata basis and included on their individual tax returns. Because an S-corporation passes through its income to its shareholders, it avoids the double taxation of corporate income suffered by C-corporations. As a general rule, the higher is the percentage of corporate income to be distributed, the more beneficial is the S election. The S-corporation form is beneficial for an existing profit-making corporation that does not reinvest earnings, or cannot do so because of an accumulated earnings problem, and expects to distribute substantially all of its income to shareholders. For an ongoing business that anticipates an accumulated earnings problem, an S-corporation election may be beneficial, at least during the interim period when earnings are distributed.

Some C-corporations avoid double taxation by paying out salaries and bonuses large enough to reduce corporate net income to zero. The IRS may challenge such compensation as excessive and reclassify part of the compensation as a nondeductible dividend. A business

effectively can eliminate the possibility of excessive compensation disputes with the IRS by electing S-corporation status.

In contrast to their C-corporation counterparts, shareholder-managers of S-corporations have incentive to favor dividend distributions over managerial compensation. This result obtains because salary income is subject to a 15.3% payroll withholding tax mandated by the Federal Insurance Contributions Act (FICA), which funds the Social Security (12.4%) and Medicare (2.9%) social insurance programs. Dividend distributions are not subject to the FICA tax, so a shareholder manager avoids the payroll tax to the extent she can shift income from salary to dividends. After the Tax Reform Act of 1982, both salaries and dividends were treated as ordinary personal income, which was subject to federal and state personal income taxes. However, the Jobs and Growth Tax Relief Act of 2003 set the federal personal-income tax rate on qualified dividends at 15% rather than at the taxpayer's marginal tax rate on ordinary income. This increased the incentive of a shareholder-manager in a high tax bracket to shift salary income to dividends. Not only would the dividend income avoid the payroll taxes, it also would be taxed at a lower rate than ordinary income, which includes salary.

For the most part, the incentive to shift salary income to dividends applies only to manager-shareholders earning less than the Social Security Wage Base, which was $60,600 in the early 1990s, but is indexed to inflation and, subsequently, has increased to $106,800 as of tax year 2009. Salary income above this cap is subject only to the Medicare Hospital Insurance portion of FICA, which is only 2.9%.

The IRS imposes a requirement of "reasonable compensation" at S-corporations to limit avoidance of the payroll tax just as it imposes a requirement at C-corporations to limit avoidance of the corporate tax. Manager-shareholders must pay themselves a "reasonable" salary based

upon what comparable non-shareholder managers working comparable hours are paid at other firms of similar size operating in the same industry. The IRS may reclassify dividends as salary if it deems managerial compensation to be "unreasonably" low. This has led many accounting firms to recommend a "60/40" rule: pay out at least 60% of earnings as salary and only 40% as dividends.

Most states follow the federal example, exempting S-corporations from the corporate income tax. However, some states, most notably California and New York, recognize the pass-through nature of S-corporations but still impose a tax at the entity level. Others do not recognize S status and treat all corporations operating in their jurisdictions as regular corporations, subjecting the entity to a corporate tax and its shareholders to a personal income tax on any dividends received from the corporation.

The S-corporation provides a significant advantage over a regular corporation if a business is operating at a loss, particularly if most or all of the owners are in the highest tax brackets. If the losses are not generated by passive activities, shareholders can use those losses to shelter other personal income.

In contrast, the C-corporation does not provide an immediate tax benefit from operating losses unless it can use an optional provision permitting carry-back of losses against profits during the three most recent tax years. However, if a new business loses money in the first years of operation, the carry-back provision does not provide any current benefit. Losses not used in the current tax year or carried back can be carried forward and used to offset profits in future years, but several years may pass before the firm's profits are large enough to realize the full tax benefit of the early losses.

2.4. Limited Liability Company

The limited liability company ("LLC") is a relatively new business structure allowed under most state laws, but not recognized as an LFO by the IRS, that is, in essence, a hybrid between the partnership and the S-corporation. Owners of an LLC enjoy limited liability, ease of transfer of ownership shares, pass-through of income to the owners, and less administrative burden than faced by owners of a corporation. For example, an LLC is not required to have a board of directors or officers, and, typically, is required to file much less burdensome paperwork with the government. However, like a corporation and unlike a partnership, an LLC enjoys an unlimited life.

Many of the LLC's disadvantages arise from its short history. Some states do not treat LLCs as offering limited liability, and some lenders may be hesitant to lend to an LLC because of difficulty in determining who actually has the authority to enter into a contract on behalf of the LLC. For federal tax purposes, an LLC must choose to be treated as a partnership, a corporation, or, for single-owners, a proprietorship.[1]

3. Literature Review

The literature on determinants of LFO is extremely sparse partially because there was no suitable source of data for analyzing this issue prior to the KFS. Consequently, most of the literature on organizational form is theoretical, dating back to Adam Smith (1776). Much of this theory focuses on finances and human resources. Berle and Means (1932), Jensen and Meckling (1976), Fama and Jensen (1983a, 1983b), Jensen (1983), Williams (1985) and others point to the separation of ownership and control and control mechanisms such as the board of directors that

[1] For more information on the tax treatment of LLCs, go to the IRS website: http://www.irs.gov/businesses/small/article/0,,id=98277,00.html

have evolved to limit agency costs as one of the reasons why most large firms are organized as C-corporations.

Fama and Jensen (1983a, 1983b) argue that firms choose their organizational form base upon a tradeoff between the costs and benefits of financial risks and decision making. As firms grow larger and more complex, corporations become more efficient relative to proprietorships because the owner must be wealthy enough to bear all of the firm's financial risk as well as possess the expertise to run the firm. Separating financing from control enables the firm to operate more efficiently by allowing separate persons to specialize in bearing risk and managing the firm. The cost of this separation is the divergence of interests between owners and managers so that corporations must develop governance mechanisms for minimizing these agency costs.

Allen and Sherer (1995) develop a theory of organizational form where the proprietorship fosters quality, whereas the corporation fosters efficiency. Proprietors are tied to their firm through both their financial and human capital, so that they suffer directly the consequences of poor quality. Corporate managers, on the other hand, are not tied to the firm by their financial resources. Consequently, Allen and Scherer's theory predicts that corporations will be the dominant form for firms that can guarantee quality in ways other than the dedication of the owner, such as through the provision of warranties.

Easterbrook and Fischel (1985) argue that most of the advantages of corporation, including limited liability, can be achieved by proprietorships and partnerships through contracting with their customers, creditors and suppliers, so that the corporation is largely irrelevant.

Another group of papers, including Harberger (1966), Shoven (1976), Ballard et al. (1985), Gravelle and Kotlikoff (1988, 1989, 1993), Gordon and Mackie-Mason (1990, 1994,

1997) and Goolsbee (1998, 2004), focus on taxes as the key issue in choosing organizational form. In the U.S., C-corporations are taxed at a different, higher rate than other LFOs, so taxes are expected to influence a firm's organizational decision, inducing them to shift out of the C-corporate form. Goolsbee (2004), for example, exploits cross-sectional variation in corporate taxes at the state level and finds strong evidence that higher corporate tax rates reduce the incidence of C-corporations relative to other LFOs.

Several empirical studies look at organizational form and firm growth. Harhoff et al. (1998) analyze a sample of 11,000 firms in Germany and find that incorporated firms grow faster than unincorporated firms. Demirguc-Kunt et al. (2006) analyze a cross-sectional sample of firms from 52 countries and find that the incidence of corporations is higher in countries with higher measures of corporate governance and that incorporated firms grow faster than unincorporated firms in countries with better corporate governance.

4. Hypotheses

The existing literature is largely silent on the initial choice of LFO. We propose two competing hypotheses—the life-cycle hypothesis and the prescient entrepreneur hypothesis.

The *life-cycle hypothesis* posits that a firm starts out as a proprietorship, which is the simplest LFO. As the firm grows larger, more complex and needs more capital than is available from the proprietor, the proprietor-entrepreneur chooses to change her firm's LFO to a partnership, Legal Liability Company (LLC), S-corporation or C-corporation. Each of these alternatives enables her firm to raise capital from outside investors and obtain funds for growth that are unavailable to a proprietorship. These alternatives also limit the owner's personal liability, which is likely to increase with the firm's growth.

However, the life-cycle hypothesis ignores the fact that there is a large degree of heterogeneity among firms, even at start-up stage. The firm heterogeneity is likely to have a great impact on the choice of initial LFO. Consider, for example, Google, which was founded as a privately held corporation by two Stanford Ph.D. students in 1998 and was taken public in 2004 and a "mom and pop" shop in California whose owners never had plans or expectations to grow or serve beyond their local community area. Why would these very different businesses with drastically different visions and growth prospects choose the same LFO just because they are at the initial year of operations? In contrast to the life-cycle hypothesis, the *prescient entrepreneur hypothesis* posits that an entrepreneur chooses at start-up the LFO that best fits her needs and desires to finance firm growth, minimize tax liabilities, and limit personal liability.

5. Data and Methodology

5.1. Data

5.1.1. The KFS

We obtain our data from the confidential, fully imputed version of the Kauffman Firm Surveys (KFS). The KFS tracks a panel of 4,928 new businesses established during 2004, providing information about the firm in the year of its inception and, for those firms that survive, providing information about the firm in each subsequent year. The survey results are available for the baseline year (2004) and seven follow-up years (2005 – 2011). The KFS is the largest longitudinal database on new businesses ever created, and the most comprehensive longitudinal database on small U.S. firms of which we are aware.

Like the Federal Reserve Board's Survey of Small Business Finances ("SSBF"), the KFS uses the Dun & Bradstreet ("D&B") database as a sampling frame, selecting a stratified random

sample of 4,928 firms from the frame of approximately 258,000 firms that started during 2004. High-tech firms were oversampled, while wholly-owned subsidiaries of existing firms, inherited businesses and not-for-profit firms were excluded from the sampling frame. Because of this non-random design, the KFS provides sampling weights for researchers to use in order to obtain results that can be generalized to the target population of start-up firms. We incorporate these weights into our analysis using the SURVEY commands available in the Stata 14 software, which we use to conduct our analysis.

The KFS is ideal for this study. Unlike the SSBF, it captures a firm's initial decision to choose an organizational form. In addition, the KFS tracks the firm's organizational form over time, enabling us to identify firms that change organizational form after their initial formation. This enables us to model the firm's decision to change organizational form and, conditional on that decision, to model its choice of a more, or less, complex organizational form. (For more detailed information about the KFS data, see Ballou *et al.,* 2008; and DesRoche *et al*., 2012. For information about the fully imputed dataset, see Farhat and Robb, 2013).

5.1.2. Analysis Variables

Our primary variable of interest is the firm's legal form of organization. For the initial survey and each follow-up, the KFS includes information on each firm's LFO as of that point in time, enabling us to identify the initial LFO and subsequent changes in LFO. The KFS categorizes seven legal forms of organization: Proprietorship, General Partnership, Limited Partnership, Limited Liability Company, S-corporation, C-corporation, and Other. We collapse the seven LFO categories into five to make our analysis more tractable by deleting 11 firms that reported "other" as their initial LFO, and by combining firms that reported general partnerships

or limited partnerships as their LFOs into a single partnership category. We follow convention in ordering organizational forms by complexity with Proprietorship being the simplest, followed by Partnership, LLC, S-corporation and, as most complex, C-corporation.

For explanatory variables, we utilize information from the KFS about the characteristics of the firm and the firm's primary owner. We are primarily interested in measures of firm complexity, as the life-cycle theory posits that firms change to more complex LFOs as they grow more complex over time. We include a total number of firm employees (in the natural logarithm form) as a measure of firm size and complexity. It is important to note that over half of the firms report zero employees. This is because the owner(s) of a firm is not necessarily an employee of the firm. When a firm hires its first employee, it becomes much more complex, especially from a tax viewpoint. The firm must begin keeping records of salary expense, withholding FICA taxes and paying state unemployment taxes. Consequently, we expect that total employment should be positively related to complexity of LFO.

We include a measure of profitability in our model: an indicator for whether the firm was operating at a profit or loss. We expect a negative relation between profitability and complexity of LFO because we expect that more complex start-ups are associated with greater start-up costs and longer periods of time until output can be ramped up and customers brought on board; consequently, they are more likely to incur larger losses from which the owners would like to be protected by the limited liability offered by more complex LFOs.

We include a dummy variable for accounts receivable. A firm with a positive value of accounts receivable is a firm that is offering trade credit to its customers. By functioning as a financial intermediary, as well as performing its primary function, the firm, by definition, is more complex and more likely to choose an LFO offering limited liability in order to protect the

personal assets of the owner. We also include a dummy variable for ownership of intellectual property, such as patents, trademarks, and copyrights. A firm reporting intangible assets, such as patents or trademarks, is more complex than a firm without such assets and is hypothesized to be more likely to choose a more complex LFO.

From information on how the firm is financed, we include dummy variables indicating whether the firm obtained financing from (1) trade credit, (2) business credit, or (3) personal credit. Here, our focus is on limited liability rather than complexity; we expect that a firm with limited liability will be more likely to rely upon debt than equity and less likely to rely upon personal credit than business credit. Consequently, we expect that complexity of LFO will be positively related to the use of trade credit and business credit and negatively related to the use of personal loans for business financing.

We include an index of employee benefits as proxy for firm complexity. Our index ranges in value from 0 to 4, where it is incremented by one if the firm offers each of the following four benefits: (1) retirement plan, (ii) health benefits, (iii) paid vacation leave, and (iv) paid sick leave. We expect our index to be positively related to complexity of LFO chosen.

We include a single measure of firm location as a proxy for firm complexity—a dummy variable indicating that the firm was located in the personal residence of the firm's owner. While there are five categories for location (residence, rental, purchased space, client's space, other space), more than 90 percent of the firms responded that they were either in a residence or a rental space, so we combine the last four categories into "other than residence" and collapse this into a binary variable. We expect that more complex firms would seek space outside of the owner's residence; consequently, we expect a negative relation between choice of organizational complexity and residential location.

Finally, as control variables, we include a set of 16 dummy variables for industrial classification based upon two-digit NAICS code: Agriculture (11); Mining and Utilities (21, 22); Construction (23); Manufacturing (31, 32, 33); Wholesale Trade (42); Retail Trade (44, 45); Transportation (48, 49); Information Services (51); Finance and Insurance (52); Real Estate (53); Professional Services (54, 55, 61); Business Services (56); Health Services (62); Arts & Entertainment (71); Food Services (72); and Other Services (81).

From information on the primary owner of the firm, we include a series of variables that provide information on the age, education, experience, and number of hours worked in the firm. Age and Experience are measured in years. Education is a range of ten categories: High School or less; Some College; College Degree; and Graduate Degree. We expect that older, better educated and more experienced primary owners will choose more complex LFOs. We expect that owners only become employees when the firm is more complex so we expect a positive relation with complexity of LFO.

5.2. Methodology

Our study uses the following research design. First, we model the firm's initial decision to choose a legal form of organization using an ordinal logistic-regression model, where the dependent variable takes on one of five values—one for each organizational form: Proprietorship = 1, Partnership = 2, LLC = 3, S-corporation = 4 and C-corporation = 5.[2]

$$Initial\ LFO_i =$$

$$f\ (Firm\ Characteristics_i, Owner\ Characteristics_i, Industrial\ Classification_i) \quad (1)$$

[2] In unreported results, we initially estimated a multinomial logistic regression model and obtained qualitatively similar results. That model produces a set of (N-1) coefficient estimates, one for each LFO relative to an omitted category. The results from that model indicated growing complexity across LFOs, which motivated us to move to the ordinal logit model, which produces only a single set of coefficient estimates, making it much easier to interpret. The ordinal logit model distinguishes among the five categories by including a separate intercept term for each non-excluded category. We are grateful to an anonymous referee for suggesting this change in methodology.

Where:

Initial LFO $_i$ is a categorical variable for organizational form for firm *i* that takes on a value of 1 through 5, with each value corresponding to one organizational form in the order of increasing complexity: Proprietorship, Partnership, LLC, S-corporation and C-corporation.

Firm Characteristics $_i$ is a vector including the number of employees, financing variables, and other variables measuring the complexity of the firms, such as the presence of intellectual property rights, employee benefits, business location, and whether or not the firm provides trade credit through accounts receivables. These variables are defined in Appendix Table 1.

Owner Characteristics $_i$ is a vector including information on the primary owner, including age, prior start-up and industry experience, number of hours worked per week, and education. These variables are defined in Appendix Table 1.

Industrial Classification $_i$ is a vector of 16 dummy variables indicating industrial classification based upon two-digit NAICS code. These variables are also defined in Appendix Table 1.

Because of the complex survey design, we incorporate the sampling weights into our analysis using the SURVEY commands available in the Stata 14 software. These weights account for the differences in selection probabilities across firms and also for the attrition of the sample over time. For each survey year, survey staff calculate different weights that ensure the sample is representative of the original target population. See Farhat and Robb (2014) for details.

6. Results

6.1. Choices of and Changes in Legal Form of Organization

Table 1 presents information on the choices of legal form of organization recorded by the initial Kauffman Firm Survey and each of the seven follow-ups. Perhaps the most interesting finding from this table is that only 36 percent of firms newly established in 2004 chose the simplest legal form of organization—the proprietorship. The life-cycle hypothesis posits that the vast majority of new firms should begin life as proprietorships.

Also surprising is the finding that 31 percent chose to organize as LLCs. This suggests a relatively high level of financial sophistication among this latter group of start-up firms, as the LLC is a relatively new legal form of organization, becoming mainstream only in the past two decades. By comparison, in the 2003 SSBF, which surveys firms with an average age of about 14 years, less than ten percent of the firms reported organizing as LLCs. The incidence among 2004 start-ups is more than three times as high.

S-corporations account for 21 percent of the 2004 start-ups as compared with more than 30 percent of small firms surveyed by the 2003 SSBF. C-corporations account for only 7 percent of the 2004 startups, compared with more than 14 percent of the 2003 SSBF firms. In summary, there are significant differences in the LFO choices of 2004 start-ups relative to those of firms surveyed by the 2003 SSBF, which have an average age of about 14 years. These results support the prescient entrepreneur hypothesis and are inconsistent with the life-cycle hypothesis.

Also shown in Table 1 is the distribution by legal form of organization for follow-up surveys 1 through 7. The weighted distributions by LFO are relatively stable across all surveys, but with a slight decline over time in proprietorships and a slight increase over time in both LLCs and S-corporations. However, the percentage of C-corporations does not increase over

time. This evidence also supports the prescient entrepreneur hypothesis over the life-cycle hypothesis.

The bottom of Table 1 presents the total number of firms, which clearly shows the attrition in the sample—from 4,924 in 2004 (initial survey) to 3,401 in 2011 (7^{th} follow-up survey). This attrition is due in part to firms going out of business and in part to firms refusing to participate in the follow-up surveys.

In Table 2, we present the number of firms changing the legal form of organization in KFS surveys. In Panel A, we present the number of firms that change LFO from a given form in the KFS survey for year (t – 1) to some other form in the KFS survey for year (t – 0). For example, the first row in Panel A shows that, out of the firms that chose the proprietorship LFO in 2004 survey, 64 changed to some other LFO in 2005 (1^{st} follow-up survey); 46 firms that chose the proprietorship LFO in 2005 changed to some other LFO in 2006 (2^{nd} follow-up survey); 31 firms that chose the proprietorship LFO in 2006 changed to some other form in 2007 (3^{rd} follow-up survey), etc.

Overall, this panel shows that: 1) changes in LFO are not very common during the first seven years of the firm's existence; 2) most of the changes in LFO that we observe in data occur during the first few years of the firm's life: 3.26% of the firms changed LFO in the 1^{st} follow-up survey, 2.52% changed in the second follow-up survey, 1.68% changed in the third follow-up survey, and only 0.68% changed LFO in the last (7^{th}) follow-up survey; and 3) consistent with the life-cycle hypothesis, a higher number of simpler LFOs (e.g., proprietorships and partnerships) change LFO than do more complex LFOs (e.g., S- or C-corporations).

Panel B tracks the number of firms that changed LFO from the firm's start-up (KFS 2004) to the 7^{th} follow-up survey (KFS 2011). Only 480 out of 4,924 firms (9.75%) changed

LFO during their first seven years of operations. However, 28% of initial partnerships and 16% of initial S-Corporations changed LFO during their first seven years, while only 3% of LLCs changed form. Panel B also reports the initial LFO and the form of organization to which the firm chooses to change. For example, out the 480 total changes in LFO, 198 changes are for firms that initially organized as proprietorships. Of these 198, 26 changed to partnerships, 12 changed to LLC, 95 changed to S-corporations, and 65 changed to C-corporations. The panel also shows that, out of 480 total changes, 139 and 181 were changes to S-corporations and C-corporations, respectively, which are the most complex forms of business organization. Surprisingly, out 99 changes in LFO from firms that started as S-corporations, only 50 change to a more complex form (C-corporation), while 28 firms change to the simplest form (Sole-proprietorship) and others changed to LLC or partnership. Furthermore, out of 61 firms that started as C-corporations, 11 firms changed to sole-proprietorship. Among partnerships, 76 changed LFO, with 11 going to proprietorship, 55 to C-corporations, and the remaining to LLC and S-corporations. Out of the total 480 changes in LFO, 340 (70.8%) moved to more complex organizational forms and 140 (29.2%) moved to less complex organizational forms. In the remainder of the paper, we seek to explain why some firms choose to become more complex, while others choose to become less complex, LFOs.

6.2. Descriptive Statistics for LFOs

In Table 3, we present descriptive statistics from the initial survey (KFS 2004) for each of the five legal forms of organization and for the full sample of 4,928 firms. These statistics allow us to make univariate comparisons across the five LFOs. We start with firm characteristics in

section 6.2.1, and then move on to owner characteristics in section 6.2.2, and to industry classifications in section 6.2.3.

6.2.1. Firm Characteristics

Panel A of Table 3 presents descriptive statistics for characteristics of the firm. Firm size as measured by total employment rises with firm complexity, from a low of 0.59 at Proprietorships to 1.33 at Partnerships, 2.04 at LLCs, 2.97 at S-corporations and 2.94 at C-corporations.[3] Profit, which is an indicator for firms reporting a profit rather than a loss, ranges from a high of 49% of proprietorships to a low of 41% for C-corporations.

Just over a third of the firms report positive accounts receivable, indicating that they are suppliers of trade credit, with S-corporations (55%) and C-corporations (43%) most likely and Partnerships (35%) and Proprietorships (27%) least likely.

Among financing variables, the importance of limited liability is quite apparent. Only 30% of proprietorships use trade credit, while 50% of C-corporations and 54% of S-corporations do so. Only 20% of proprietorships use business credit, whereas at least 29% of the limited liability LFOs do so. In contrast, there is much less variation in the use of personal credit. Forty percent of both proprietorships and C-corporations use personal credit. Only 37% of partnerships use personal credit while 46% of LLCs do so.

The next group of variables is a set of firm characteristics that we expect to proxy for the firm's complexity at the start-up. *Intell Property* is an indicator variable for the presence of intellectual property rights (trademarks, patents, or copyrights). Only 15% of proprietorships report intellectual property, while 22% of LLCs, 21% of S-corporations and 26% of C-corporations do. *Residence* is an indicator variable for the location of the business in the owner's

[3] Not shown in Table 3 is the number of firms with no employees; only 41 percent of the firms report having at least one employee; 31% of proprietorship, 36% of partnerships, 39% of LLCs, 55% of S-corporations and 56% of C-corporations.

residence. Among Proprietorships, 64% choose to locate in a residence, whereas, among S- and C-corporations, only 39% and 36%, respectively, locate in a residence. *Benefits Index* is an index of comprehensive employee benefits, ranging in value from 0 to 4 for the presence of retirement plan, health benefits, paid vacation leave, and paid sick leave. The average index value for proprietorships is 0.12, while it is 0.59 for LLCs, 0.85 for S-corporations and 0.74 for C-corporations.

6.2.2. Owner Characteristics

Panel B of Table 3 presents descriptive statistics for characteristics of the owners. There is little variation in owner age by LFO; each of the five are in the range of 44 to 46 years old, with S-corporations having the youngest owners (44.15) and C-corporations having the oldest (45.61). Prior start-up experience rises with complexity of LFO from a low of 0.65 years for proprietorships to a high of 1.17 for C-corporations. Similarly, education rises from 5.72 at proprietorships to 6.56 at LLC, 6.28 at S-corporations and 6.27 at C-corporations. Hours worked rises from 38.4 at proprietorships to 46.8 at S-corporations and 46.9 at C-corporations. Prior experience rises from a low of 11.1 years for proprietorships to a high of 12.44 at S-corporations, but is only 11.85 at C-corporations.

6.2.3. Industrial Classification

In Panel C of Table 3 are descriptive statistics for our final set of variables—a set of 16 indicators for industrial classification based upon two-digit NAICS codes. We expect to find sharp differences in organizational form across different industries, and the data bear out our expectations.

Professional-Services (NAICS 54, 55, 61) accounts for 17% of the population, but is over-represented among more complex LFOs (19% of LLCs and C-corporations) relative to less

complex LFOs (17% of Proprietorships and 15% of Partnerships). Retail-Trade (NAICS 44, 45) accounts for 15% of the population, but is over-represented among less complex LFOs (20% of Partnerships and 17% of Proprietorships) relative to more complex LFOs (14% of LLCs, 14% of S-corporations and 11% of C-corporations). Similarly, Other Services, including public administration (NAICS 81, 92) account for 9% of the population but overrepresented among less complex LFOs (13% of Proprietorships and Partnerships but only 6% for LLCs, and 5% for both S- and C-corporations). Construction (NAICS 23) accounts for 11% of the population, but is over-represented among S-corporations (13%) and under-represented among C-corporations (8%).

Manufacturing (NAICS 31, 32, 33) accounts for 6% of the population and is similarly represented among C-corporations (8%) and Proprietorships (7%) and less represented in other LFOs (5%). Transportation and Warehousing (NAICS 48, 49) accounts for 3% of the population but is over-represented among C-corporations (8%) and Partnerships (6%). Finance and Insurance (NAICS 52) accounts for 6% of the population, but is over-represented among more complex LFOs (11% of Partnerships, 7% of LLCs, 6% of S-corporations and 8% of C-corporations) relative to the least complex LFO (2% of Proprietorships).

There also are significant differences among the remaining industries that account for much smaller portions of the population. To summarize, we find wide variation in LFO across industries, as expected.

6.3. Determinants of Initial LFO

Because so few firms change their LFO during the first seven years, the most interesting analysis is looking at the determinants of the owner's initial decision to organize her firm as one LFO rather than another. The results of this ordinal logistic-regression analysis appear in Table 4. For ease of interpretation, we present odds ratios rather than coefficient estimates. The interpretation of these ratios (when multiplied by 100) is, for each variable, the percentage by which a firm with that characteristic is more or less likely to choose a more complex LFO than a Proprietorship (the omitted category). Hence, for variables that proxy for more organizational complexity, our expectation is that odds ratios will be greater than one; and for variables that proxy for less organizational complexity, our expectation is that odd ratios will be less than one.

6.3.1. Firm Characteristics and Initial LFO

Column 1 of Table 4 presents the results for firm characteristics. For our primary measure of size—total employment—the odds ratio is greater than 1.0, and the coefficient from which the odds ratios is calculated is statistically significant at the 0.01 level or better. This result is strongly supportive of our hypothesis that a larger firm, which is likely to be more complex, is more likely to choose a more complex initial legal form of organization.

The coefficient on accounts receivable indicator is positive and significant with the odds ratio of 1.409, supporting the hypothesis that more complex business that offer trade credit to customers are more likely to choose a more complex LFO. Furthermore, the coefficient on trade credit and business credit indicators are positive and significant with odds ratios greater than 1.0 suggesting that firms use trade and business credit financing in the initial year of operations choose a more complex LFO.

Coefficients for our employee benefits index and intellectual property indicator are also positive and significant suggesting that firms that offer comprehensive benefits plans and have intellectual property, such as, patents, trademarks, and copyrights are more likely to choose more complex LFOs. The odds ratio on residence indicator is less than 1.0 suggesting that firms that locate their business in the residence or garage of the firm's owner, rather than in rented or purchased space, are less likely to choose a more complex LFO.

In summary, the results for firm characteristics chosen as proxies for firm complexity support our hypothesis that more complex firms choose more complex LFO at the firm's start-up.

6.3.2. Industry Classification and Initial LFO

In column 2 of Table 4 are the results for the 15 industrial classification indicator variables, where "other services" industry is the omitted category. In general, these results show wide variation in initial LFO across industries. Compared to other services, most industry indicators have odds ratios greater than 2.0 or 3.0 and highly statistically significant. Specifically, firms in construction, manufacturing, information, professional management and education services, health care are twice as likely to choose a more complex LFO than firms in other businesses. Firms in whole sale trade, finance and insurance, real estate are three times as likely to choose a more complex LFO compared to firms in Other Services. These results suggest that the only industry that consistently favors Proprietorship over the more complex LFOs is Other Services.

6.3.3. Owner Characteristics and Initial LFO

Column 3 of Table 4 presents the results for owner characteristics. Prior start-up experience, owner's education, and the number of hours the owner works in the firm play an

important role in the choice of initial LFO, with higher values of these variables associated with higher likelihood of choosing more complex LFO at the firm's start-up. Owners with more years of experience in the same industry are also more likely to choose a more complex LFO, but this result is only marginally statistically significant (t-statistic=1.678). Interestingly, the coefficient on Ln(Age+1) is negative with the odds ratio of less than 1.0, suggesting that older owners are less likely to choose a more complex LFO. This result is significant at the 10% level (t-statistic= -1.699).

Overall, these results suggest that the type of firm owners who are more likely to choose more complex business are also more likely to choose more complex LFO.

6.3.4. Firm, Owner Characteristics, Industry Classifications and Initial LFO

In column 4 of Table 4, we present the results from a model that includes firm characteristics, owner characteristics, and industry classifications. In general, the results in column 4 are qualitatively unchanged from the results in columns 1 – 3, but with some notable exceptions. For our measure of profitability —indicator variable for positive profits —the odds ratio is less than 1.0, and the coefficient is now statistically significant at the 0.10 level. This result is supportive of our hypothesis that a more complex firm has greater startup costs and, consequently, is more likely to choose a more complex LFO with limited liability in order to shield its owners from firm early-years losses. The indicator variable for use of personal credit has a negative coefficient that now is significant at the 0.10 level. This indicates that firms using personal credit are less likely to choose a more complex LFO at start-up. Several of the industry indicator variables lose their statistical significance in this comprehensive specification, but ten retain significance at the 0.10 level or better.

Finally, we note that the four constant terms at the bottom of Table 4 increase monotonically in each specification. This is supportive of our assumption of an ordinal ranking of LFOs from least to most complex.

7. Summary and Conclusions

In this study, we have sought to provide answers to several fundamental questions facing any entrepreneur. Why and how do entrepreneurial firms initially choose one organizational form over another? Do entrepreneurial firms change organizational form, switching, for example, from proprietorship to partnership, LLC or corporation? What factors influence the entrepreneur's choice of initial LFO? Until now, these fundamental questions about entrepreneurial firms have largely gone unanswered.

Surprisingly, our analysis reveals that a firm's choice of LFO is largely set in stone at inception, at least for its first seven years in operation. Only about one in three firms begins its life as a proprietorship, while almost as many begin as limited liability companies and as corporations. This distribution is remarkably stable over the first seven years of a firm's life. Fewer than one in ten firms changes LFO during these first seven years, but those that do disproportionately move to a more complex form, primarily from proprietorship to a form with limited liability. In general, these findings do not support the life-cycle theory of the firm, except for those firms that do change LFO during their first four years. Alternatively, the firm endogenously chooses LFO at start-up to meet the demands of expected complexity of the firm.

Our analysis of the firm's initial choice of LFO reveals that a firm is more likely to choose a more complex LFO when the firm is more complex as proxied by employment size, by offering more complex employee benefit plans, and by offering trade credit. A more complex

initial LFO also is more likely when the firm uses trade and business credit financing, has intellectual property, and is located outside of the owner's place of residence. Owners with higher education, who have greater prior start-up experience and spend more hours working in the firms also choose a more complex LFO.

This study makes an important contribution to the entrepreneurship literature by providing new evidence on: (i) a firm's initial choice of LFO at start-up; (ii) the determinants of a firm's initial choice of LFO; and (iii) the incidence of changes in LFO during the first seven years of a new firm.

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Appendix Table 1
Definition of Analysis Variables

This table presents variable definitions. All variables are from the 2004 Kauffman Firm Survey.

Firm Characteristics:	
N employees	The total number of employees
Profit	Dummy variable, equals 1 if firm reports positive profits
Accounts Receivable	Dummy variable, equals 1 if firm reports accounts receivable
Trade Credit	Dummy variable, equals 1 if firm reports that it uses trade credit or has other liabilities
Business Credit	Dummy variable, equals 1 if firm reports that it uses business credit. Business credit includes any of the following categories: business bank loan, business credit line, business loan from nonbank institutions, business credit card, business credit card issued on owner's name, business loan from the government, business loan from other businesses, business loan from other sources
Personal Credit	Dummy variable, equals 1 if firm reports that it uses personal credit. Personal credit includes any of the following categories: personal bank loan by the primary owner, personal bank loan by other owners, the primary owner's personal credit card used for business purposes, and the other owners' personal credit cards used for business purposes
Benefits Index	Index, ranges in values from 0 to 4, and equals the sum of the following benefits offered by the firm: health benefits, retirement benefits, paid sick leave, paid vacation leave
Intell Property	Dummy variable, equals 1 if firm reports that it has trademarks, patents, or copyrights
Residence	Dummy variable, equals 1 if firm reports that it operates the business from the owner's place or residence or garage
Owner Characteristics:	
Owner Age	Age of primary owner (in years)
Education	Categorical variable for the primary owner's level of education: less than ninth-grade education, has some high school education but no diploma, high school graduate or diploma, attended some college, has a bachelor's degree, attended a graduate school but has no graduate degree, has a master's degree, has a Ph.D. degree
Prior Experience	Prior work experience (in years) of the primary owner in the same industry
Prior Start-ups	Number of prior business start-ups by the primary owner
Hours worked	Number of hours worked per week by the primary owner

Industry Classifications:	*Two-Digit NAICS Code*
Agriculture, Forestry, Fishing and Hunting	11
Mining and Utilities	21, 22
Construction	23
Manufacturing	31-33
Wholesale Trade	42
Retail Trade	44-45
Transportation and Warehousing	48-49
Information	51
Finance and Insurance	52
Real Estate and Rental and Leasing	53
Professional, Management, and Educational Services	54, 55, 61
Administrative and Support and Waste Management and Remediation Services	56
Health Care and Social Assistance	62
Arts, Entertainment, and Recreation	71
Accommodation and Food Services	72
Other Services, including Public Administration	81, 92

Table 1
Distribution of KFS Firms by Legal Form of Organization

This table presents the weighted percentage distributions of KFS firms by legal form of organization (LFO) at startup (initial KFS survey) and for each of its first seven years in operation. PROP indicates a proprietorship; PART indicates a partnership; LLC indicates a limited liability company; SCORP indicates an S-corporation; CCORP indicates a C-corporation. Obs. is the number of observations.

	KFS Survey							
LFO	Initial	1st Follow-Up	2nd Follow-Up	3rd Follow-Up	4th Follow-Up	5th Follow-Up	6th Follow-Up	7th Follow-Up
PROP	0.36	0.34	0.33	0.34	0.34	0.33	0.33	0.31
PART	0.06	0.05	0.05	0.05	0.04	0.04	0.04	0.04
LLC	0.31	0.31	0.32	0.3	0.32	0.32	0.32	0.34
SCORP	0.21	0.22	0.23	0.24	0.24	0.25	0.25	0.25
CCORP	0.07	0.07	0.07	0.06	0.06	0.06	0.06	0.06
Obs.	4,924	4,565	4,253	3,990	3,817	3,662	3,519	3,401

Table 2
Changes in Legal Form of Organization

This table presents the number of KFS firms that changed legal form of organization during their first eight years of operating. Panel A shows the number of firms that changed from a given legal form of organization (LFO) in prior year (*t-1*) to some other type of LFO in the follow-up year (*t-0*). Panel B shows the total number of firms that changed from one LFO to another at any time during their first eight years of operating. PROP indicates a proprietorship; PART indicates a (general or limited) partnership; LLC indicates a limited liability company; SCORP indicates an S-corporation; CCORP indicates a C-corporation. t=0 indicates initial KFS survey (KFS 2004); t=7 indicates 7th follow-up survey (KFS 2011). "N/A" indicates that the information cannot be disclosed publicly according to NORC enclave disclosure rules because the small number of observations (< 10) might enable identification of individual firms in violation of the KFS privacy agreement with survey respondents.

Panel A: Number of Firms Changing LFO from Prior Year to the Following Year

LFO in year t-1	1st Follow-up	2nd Follow-up	3rd Follow-up	4th Follow-up	5th Follow-up	6th Follow-up	7th Follow-up
PROP	64	46	31	17	18	13	N/A
PART	32	N/A	N/A	N/A	N/A	N/A	N/A
LLC	18	N/A	10	N/A	N/A	N/A	N/A
SCORP	21	24	14	13	11	11	N/A
CCORP	14	15	N/A	12	N/A	N/A	N/A
Total	149	107	67	54	43	37	23

Panel B: Number of Firms Changing LFO from the Initial to the 7th Follow-up Year

	PROP (t=7)	PART (t=7)	LLC (t=7)	SCORP (t=7)	CCORP (t=7)	Total
PROP (t=0)	0	26	12	95	65	198
PART (t=0)	11	0	N/A	N/A	55	76
LLC (t=0)	19	N/A	0	14	N/A	46
SCORP (t=0)	28	N/A	N/A	0	50	99
CCORP (t=0)	11	29	0	21	0	61
Total	69	75	16	139	181	480

Table 3
Descriptive Statistics by Legal Form of Organization

This table presents descriptive statistics for variables used to explain the firm choice of legal form of organization and subsequent changes in legal form of organization. Variables are defined in Appendix Table 1. Data are from KFS 2004. For each variable in column one and each organizational form in row one, the table presents the mean value, with standard error reported in brackets. PROP indicates a proprietorship; PART indicates a (general or limited) partnership; LLC indicates a limited liability company; SCORP indicates an S-corporation; and CCORP indicates a C-corporation; ALL indicates all firms. Obs. is the number of observations.

Panel A: Firm Characteristics						
	PROP	PART	LLC	SCORP	CCORP	ALL
N employees	0.59	1.33	2.04	2.97	2.94	1.74
	[0.05]	[0.40]	[0.23]	[0.31]	[0.57]	[0.11]
Ln (N employees +1)	0.29	0.42	0.59	0.83	0.82	0.54
	[0.02]	[0.06]	[0.03]	[0.04]	[0.08]	[0.02]
Profit	0.49	0.42	0.42	0.47	0.41	0.45
	[0.02]	[0.05]	[0.02]	[0.02]	[0.04]	[0.01]
Accounts Receivable	0.27	0.35	0.39	0.55	0.43	0.38
	[0.02]	[0.05]	[0.02]	[0.02]	[0.04]	[0.01]
Trade Credit	0.30	0.35	0.39	0.54	0.50	0.39
	[0.02]	[0.05]	[0.02]	[0.02]	[0.04]	[0.01]
Business Credit	0.2	0.29	0.3	0.38	0.29	0.28
	[0.01]	[0.04]	[0.02]	[0.02]	[0.04]	[0.01]
Personal Credit	0.4	0.37	0.46	0.42	0.4	0.42
	[0.02]	[0.05]	[0.02]	[0.02]	[0.04]	[0.01]
Intell Property	0.15	0.18	0.22	0.21	0.26	0.19
	[0.01]	[0.04]	[0.02]	[0.02]	[0.03]	[0.01]
Residence	0.64	0.44	0.47	0.39	0.36	0.5
	[0.02]	[0.05]	[0.02]	[0.02]	[0.04]	[0.01]
Benefits Index	0.12	0.51	0.59	0.85	0.74	0.48
	[0.02]	[0.09]	[0.04]	[0.06]	[0.09]	[0.02]
Panel B: Owner Characteristics						
Owner Age	45.28	45.52	45.48	44.15	45.61	45.15
	[0.38]	[1.12]	[0.41]	[0.45]	[0.86]	[0.23]
Ln (Owner Age+1)	3.78	3.78	3.79	3.76	3.79	3.78
	[0.01]	[0.03]	[0.01]	[0.01]	[0.02]	[0.01]
Prior Start-ups	0.65	0.84	0.95	0.92	1.17	0.85
	[0.04]	[0.11]	[0.05]	[0.07]	[0.11]	[0.03]
Education	5.72	5.53	6.56	6.28	6.27	6.12
	[0.07]	[0.20]	[0.08]	[0.09]	[0.17]	[0.04]
Hours worked	38.38	42.21	42.22	46.77	46.85	42.12
	[0.84]	[2.14]	[0.95]	[1.01]	[1.83]	[0.51]
Prior Experience	11.13	12.08	12.26	12.44	11.85	11.85
	[0.37]	[1.09]	[0.39]	[0.46]	[0.81]	[0.22]
Obs.	1,635	244	1,557	1,040	441	4,928

Table 3 (continued)

Panel C: Industrial Classification

	PROP	PART	LLC	SCORP	CCORP	ALL
Agriculture, Forestry, Fishing, Hunting	0.01	0.01	0.02	0.01		0.01
	[0.00]	[0.01]	[0.00]	[0.00]	(omitted)	[0.00]
Mining and Utilities	0.00	0.00	0.00	0.00		0.00
	[0.00]	(omitted)	[0.00]	[0.00]	(omitted)	[0.00]
Construction	0.1	0.09	0.1	0.13	0.08	0.11
	[0.01]	[0.03]	[0.01]	[0.02]	[0.03]	[0.01]
Manufacturing	0.07	0.05	0.05	0.05	0.08	0.06
	[0.01]	[0.02]	[0.01]	[0.01]	[0.02]	[0.00]
Wholesale Trade	0.05	0.01	0.04	0.07	0.09	0.05
	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]	[0.01]
Retail Trade	0.17	0.2	0.14	0.14	0.11	0.15
	[0.01]	[0.04]	[0.01]	[0.02]	[0.03]	[0.01]
Transportation and Warehousing	0.03	0.06	0.02	0.03	0.08	0.03
	[0.01]	[0.02]	[0.01]	[0.01]	[0.02]	[0.00]
Information	0.04	0.03	0.03	0.04	0.03	0.03
	[0.01]	[0.02]	[0.01]	[0.01]	[0.01]	[0.00]
Finance and Insurance	0.02	0.11	0.07	0.06	0.08	0.06
	[0.01]	[0.03]	[0.01]	[0.01]	[0.02]	[0.01]
Real Estate Rental and Leasing	0.03	0.06	0.08	0.05	0.05	0.05
	[0.01]	[0.02]	[0.01]	[0.01]	[0.02]	[0.00]
Prof., Management and Educ Services	0.17	0.15	0.19	0.16	0.19	0.17
	[0.01]	[0.03]	[0.01]	[0.01]	[0.03]	[0.01]
Admin and Support Services	0.09	0.06	0.1	0.11	0.09	0.1
	[0.01]	[0.02]	[0.01]	[0.02]	[0.02]	[0.01]
Health Care and Social Assistance	0.03	0.01	0.02	0.03	0.04	0.03
	[0.01]	[0.01]	[0.01]	[0.01]	[0.02]	[0.00]
Arts, Entertainment, and Recreation	0.03	0.03	0.03	0.02	0.01	0.03
	[0.01]	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Accommodation and Food Services	0.02	0.01	0.04	0.03	0.02	0.03
	[0.00]	[0.01]	[0.01]	[0.01]	[0.01]	[0.00]
Other Services, including Public Admin	0.13	0.13	0.06	0.05	0.05	0.09
	[0.01]	[0.03]	[0.01]	[0.01]	[0.02]	[0.01]
Obs.	1,635	244	1,557	1,040	441	4,928

Table 4
Determinants of Initial LFO

This table presents the results from estimating an ordinal logistic regression model of the firm's choice of legal form of organization (LFO) at startup. LFOs are ranked by complexity, with Proprietorship taking on a value of 1, Partnership a value of 2, LLC a value of 3, S-Corporation a value of 4, and C-Corporation a value of 5. Explanatory variables are defined in Appendix Table 1. For each explanatory variable, the table presents the odds ratio and the t-statistic (reported in brackets) associated with the coefficient estimate. ***, **, and * indicate statistical significance at the 0.01, 0.05, and 0.10 levels, respectively. Obs. is the number of observations.

VARIABLES	1	2	3	4
Firm Characteristics :				
Ln (N employees +1)	1.317***			1.337***
	[4.896]			[4.550]
Profit	0.894			0.854*
	[-1.364]			[-1.876]
Account Receivables	1.409***			1.332***
	[3.810]			[3.011]
Trade Credit	1.200**			1.239**
	[1.995]			[2.281]
Business Credit	1.236**			1.322***
	[2.382]			[3.059]
Personal Credit	0.883			0.867*
	[-1.536]			[-1.703]
Benefits Index	1.275***			1.186***
	[5.946]			[3.769]
Intell Property	1.217**			1.215**
	[2.120]			[1.988]
Residence	0.687***			0.642***
	[-4.372]			[-4.861]
Owner Characteristics :				
Prior Start-ups			1.166***	1.080**
			[5.376]	[2.446]
Ln (Age+1)			0.744*	0.782
			[-1.699]	[-1.386]
Education			1.132***	1.090***
			[6.440]	[4.140]
Hours Worked			1.011***	1.003*
			[6.619]	[1.717]
Prior Experience			1.007*	1.004
			[1.678]	[0.848]

Table 4 (cont.)

VARIABLES	1	2	3	4
Industry Classifications:				
Agriculture, Forestry, Fishing, Hunting		1.994**		1.587
		[2.251]		[1.259]
Mining and Utilities		2.098		1.758
		[1.540]		[1.185]
Construction		2.439***		2.589***
		[4.680]		[4.887]
Manufacturing		1.970***		1.549**
		[3.225]		[2.189]
Wholesale Trade		3.184***		2.389***
		[4.664]		[3.455]
Retail Trade		1.763***		1.415**
		[3.376]		[2.035]
Transportation and Warehousing		2.762***		2.866***
		[3.167]		[3.224]
Information		2.010***		1.540*
		[2.739]		[1.812]
Finance and Insurance		3.775***		3.408***
		[6.889]		[5.886]
Real Estate Rental and Leasing		3.166***		3.436***
		[6.184]		[5.993]
Prof., Management and Educ Services		2.190***		1.941***
		[5.141]		[4.061]
Admin and Support Services		2.542***		2.476***
		[5.104]		[4.887]
Health Care and Social Assistance		2.199**		1.583
		[2.550]		[1.580]
Arts, Entertainment, and Recreation		1.723**		1.429
		[2.246]		[1.459]
Accommodation and Food Services		2.962***		1.336
		[4.758]		[1.094]
Intercepts				
Constant cut1	0.694***	1.197	0.735	1.016
	[-3.762]	[1.365]	[-0.469]	[0.023]
Constant cut2	0.908	1.537***	0.949	1.348
	[-0.993]	[3.267]	[-0.079]	[0.432]
Constant cut3	3.825***	5.799***	3.669**	5.990***
	[12.901]	[12.798]	[1.977]	[2.586]
Constant cut4	21.586***	29.911***	19.189***	34.613***
	[22.469]	[21.748]	[4.486]	[5.091]

Improving the performance of Governmental venture capital firms: A case study of Shenzhen Capital Group

This paper documents how Shenzhen Capital Group (SCG) tackled typical problems faced by governmental venture capital firms (GVCs) by adopting an expansion strategy and a series of reforms in compensation, decision-making procedures and staff co-investment opportunities. I investigate the impact of these changes on SCG's performance and find that the return of SCG's total investments, as measured by the percentage of successful exits through initial public offering (IPO) or merger & acquisition (M&A), is higher than other GVCs. Furthermore, portfolio companies invested in by SCG or a SCG-led syndicate in their first round of VC financing are more likely to achieve successful exits that those by other GVCs. This paper provides evidence that GVCs can improve their performance by better aligning the interests of investors and venture capitalists.

Keywords: governmental venture capital firms; expansion strategy; performance

Subject classification codes: G24, G28

1 Introduction

As governments around the world set up governmental venture capital firms (GVCs, hereafter) to promote local entrepreneurship, there is a growing discussion about the role and the performance of GVCs. When measured by the likelihood of achieving IPO and M&A for the portfolio companies, Cumming et al.(2017) show that enterprises financed by GVCs underperformed private venture capital firms (PVCs, hereafter) on the in European countries. Brander et al. (2008) find a similar result for VC investments in Canada. When looking at value-added activities provided by VCs to their investees, firms backed by a sole GVC achieved slower growth in sales (Grilli & Murtinu, 2014b) and productivity (Alperovych et al., 2015). GVCs are reported to be less active in helping their investees to recruit managers and to raise funds (Bottazzi et al., 2008). Furthermore, GVCs even perform worse than PVCs in catalysing innovation and boosting employment in which areas GVCs are supposed to have more

responsibilities. Bertoni & Tykvová (2015) find GVCs-backed companies underperform in innovation measured by patents applications and citations, compared to those backed by PVCs. When measuring the impact of GVCs by employment creation, Standaert & Manigart (2018) find GVCs are less effective than PVCs in promoting the growth of employment for small and medium-sized enterprises.

Cumming et al.(2017) summarise three weaknesses of GVCs in explaining GVCs' underperformance. First, GVCs are established by statute instead of negotiation among contracting parties, therefore fail to have effective governance; Secondly, the compensation scheme of GVCs is less efficient without "carried interests" at PVCs; Thirdly, the interference by government officials leads to a less independence for GVCs in decision-making. Zhang & Mayes (2018) investigate the differences between GVCs and PVCs and point out the underperformance of GVCs is mainly due to agency problems at two levels: (1) at the VC firm level, where there is no link between the GVCs' current investment performance and future fund-raising, and (2) at the staff level, where the compensation scheme of GVCs is less effective. However, there is little literature discussing the possible way of how to improve the performance of GVCs, and the evidence for supporting suggested improvement is even scant.

The case of Shenzhen Capital Group (SCG, hereafter) provides a quasi-experiment to investigate the impact of improved governance in GVCs on their performance. SCG, as other GVCs, used to rely on the local government as its main funding resource. However, SCG adopted an expansion strategy in 2006 and established many Government-backed Funds (GBFs, hereafter) in cooperation with local governments outside Shenzhen. The new strategy created a link between SCG's current investment performance and its future fundraising because SCG's track record served as an important factor in convincing other local governments to cooperate with SCG. In addition, SCG carried out a series of reforms in staff compensation, which better aligned the interest of managers with the company.

In a case study of Harvard Business School by Gompers *et al.*(2012), SCG is described as the pioneer of GBFs in China. They attribute SCG's success to its large scale of funds management. My research aims to provide a more

comprehensive overview of changes in SCG and, more importantly, to throw light on the impacts of these changes on SCG's return of investments and its capability of selecting and nurturing portfolio companies compared to other GVCs.

I conducted six face-to-face interviews with managers of SCG and was present as an Investment Committee meeting of the company to obtain insights into the changes in strategies and governance at SCG. Appendix A provides details of the interviews and my personal observations at the meeting. Information collected in the interviews confirms that SCG benefits from its expansion strategy through economies of scale and the link between SCG's current investment and its future fundraising. In addition, SCG's reforms in compensation, decision-making and staff investments also improve its governance.

I use data on investments by all GVCs in China between 1999 (when SCG was established) and 2010 to compare the performance of investments by SCG with those by other GVCs before and after SCG's expansion strategy. First, I compare the return on investments and find that SCG has a higher rate of success in early stage investment than other GVCs after it adopted the expansion strategy. For late-stage investment, SCG does not show any difference from other GVCs pre and post its reform. Secondly, I compare SCG's capability in selecting and nurturing enterprises with other GVCs and find that the portfolio companies backed by SCG are more likely to achieve successful exits through IPO or M&A than those by other GVCs after 2006.

This paper is structured as follows: Section 2 reviews the background of SCG and the challenges faced by SCG and other GVCs before 2006. Section 3 investigates SCG's expansion strategy and other reforms in the governance of the company and develops hypotheses. Section 4 introduces the model and the data. Section 5 shows the empirical results before discussing the implications on public policies in Section 6.

2 Background and challenges to SCG

2.1 Establishment of SCG and its features as a GVC

SCG was established in 1999 by the Shenzhen Municipality Government, with equity of 500 million RMB from the government and another 200 million RMB

from six local state-owned enterprises as initial backers (Breznitz & Murphree, 2011). SCG is notable in part for being the first GVC in Shenzhen (which is the pioneer of reform in China), but particularly for its strategy of actively raising funds outside of its original city and its success in achieving initial public offerings (IPOs thereafter) for its portfolio companies. With the original intention of promoting the development of the local VC industry, SCG was one of the earliest GVCs in China and has since become the most successful one.

SCG is a good case to explore how to improve the performance of GVCs because the company meets all the three criteria of being a GVC both before and after its reform in 2006:

(1) Its main funding resource is from the local government of Shenzhen;

(2) Its chair of the board and CEO are appointed by the local government; and

(3) It is under the supervision of the local State-owned Assets Supervision and Administration Commission (SASAC hereafter) like other local SOEs.

Although SCG has been consistently adding private enterprises as its shareholders, it is still a state-owned enterprise (SOE hereafter), as it meets the criterion of being an SOE as "the government is the de facto owner, and they choose managers to run the firm" (Allen *et al.*, 2005). Table 1 provides the information on the shareholding of SCG since its establishment. Shenzhen Municipality Government's direct holding in SCG had been less than 50% since 2002. However, because some of the main shareholders of SCG are 100% owned or controlled by Shenzhen Municipality Government, the percentage of shares held by the local government directly and indirectly in SCG has always been above 50%. In other words, the local government has remained the actual controlling shareholder of SCG. The local government appoints the chair of the board and the CEO for SCG, and the local SASAC supervises and assesses the operation of the company.

[Insert Table 1 here]

2.2 Challenges to SCG before 2006

When being appointed as president of SCG in 2005 by the local SASAC, Mr Haitao Jin faced growing concern about both limited funding resources and highly

illiquid exit channels. At that time, the biggest issue SCG faced was that it mainly relied on its shareholders' equity for investment. Moreover, the investments of SCG in its portfolio companies were highly illiquid before the split-share structure reform in 2005 and were hard to sell even after the portfolio companies were floated on the stock markets. Under such circumstances, it was quite challenging for SCG to meet SASAC's annual assessment, which is focused on the annual return of equity rather than a performance measure that is aligned with the life cycle of VC funds (seven to ten years).

The challenges faced by SCG were similar to other GVCs at that time. With the funds granted by government statute, GVCs did not have to compete with other VC firms to raise funds. The decision of local governments on whether to continue or expand financing a GVC is mainly affected by the need for promoting the local economy and venture industry rather than by the performance of the GVC. Without the motivation of future fund-raising, the managers of GVCs may not exert much effort (Cumming *et al.*, 2017; Leleux & Surlemont, 2003).

The GVCs' compensation scheme makes it more difficult to motivate the managers in GVCs. The common practice at private VC firms (Zider, 1998) is to have an annual management fee (2-3% of committed capital) and carried interest or "carry" (20% of the profit that is higher than a pre-agreed return rate). According to WallStreetOasis.com[1], junior staff (like analysts and associates) in VC firms do not receive carry as part of their income, but senior management (like vice presidents, managing directors and general partners) have a large proportion of their compensation on "carry" that can be as high as three to nine times their base salaries. The compensation system that emphasises "carry" plays a critical role in aligning the interests of venture capitalists and limited partners (Sahlman, 1990), because "venture capitalists have incentives to engage in activities that increase the value of the carried interest, which is precisely what benefits the limited partners."

In contrast, compensation for the managers of GVCs is limited to annual salary

[1] WallStreetOasis.com is a popular forum for investment bankers, venture capitalists and other professionals in finance.

plus bonus, just like managers of other SOEs. Furthermore, local SASACs put a cap on the total income of general managers in SOEs. For example, Shenzhen SASAC requires that the annual bonus for general managers in SOEs shall not exceed three times their base salary—about USD 40,000 per year.

A lack of independence in decision-making is another concern for GVCs (Cumming *et al.*, 2017). The influence of local governments on GVCs' decision making is mainly through their appointed managers. GVCs often make investment decisions that are not only based on the quality of the projects but are also under political pressure from government officials.

Despite the obstacles to fundraising and exiting, many opportunities for SCG and other GVCs existed by 2006. First, the split-share structure reform (non-tradable state-owned shares in state-owned public companies becoming tradable in the secondary stock market) in China that started in mid-2005 enabled GVCs to get a considerable return if they had accumulated investments in the preceding years. Secondly, there had been a strong demand by the Chinese central government to establish a NASDAQ-style board to facilitate the financing of high-tech and small enterprises. The central government had already chosen Shenzhen as the location of the new board (currently known as "ChiNext"), and the only decision pending was to choose the best timing. The expectation of the forthcoming new board provided VC firms, especially those in Shenzhen, the incentive to screen and nurture more potential ventures to get listed on ChiNext. Thirdly, the central government initiated support for developing Government-backed Funds and carried out *Interim Regulation on Venture Capital Firms* at the end of 2005. SCG responded to these challenges and opportunities by making a series of reforms, which had a profound impact on the company's performance.

3 SCG's new strategy and reforms

3.1 Expansion strategy

SCG's most influential action was to expand outside of Shenzhen and cooperate with other local governments to establish GBFs. Interviewees mentioned the factors that led to the cooperation of SCG and local governments on both the demand and supply side. On the demand side, local governments have a strong intention to change the traditional way of boosting innovation and economic

development by allocating subsidies towards a more market-oriented style. On the supply side, SCG's track record, together with its expertise in managing governmental VC funds, secured its cooperation with the local governments.

As the pioneer of establishing GBFs, SCG adopted a three-pillar structure in funding its GBFs. Local government, SCG, and other local SOEs or private companies contributed 1/3 of the funds respectively. SCG managed the GBFs as the general partner, while the local government and the other enterprises acted as the limited partners. A larger proportion of commitment by general partners is crucial for first time fundraising to establish credibility (Lerner & Hardymon, 2002). Compared to the general practice at PVCs that general partners contribute only 1% of committed capital (Sahlman, 1990), the much higher proportion of contribution by SCG as the fund manager (1/3 of the committed capital) ensures a better alignment of interests for SCG and the local governments.

Additionally, the funds from the local governments adopted a practice similar to preferred stocks, i.e. the local governments only asked for a fixed return (similar to the interest rate of government securities) when the funds invested generated positive cash flow, and they had a prior claim on the fund's assets if it were liquidated. This arrangement ensured a relatively low risk for local state-owned assets in GBFs and increased the local governments' willingness to cooperate with SCG.

Following the adoption of its expansion, SCG established 40 GBFs with local governments around the country from 2006 to 2010. As mentioned by the interviewees, SCG benefits from economies of scale in fundraising through both local government, local SOEs and private enterprises. SCG better leveraged its investment team than before in screening, monitoring and value-adding activities. SCG also obtained better access to a broader range of local resources across the country, and more potential deal flows compared to how it was before adopting the expansion strategy. By managing a larger amount of funds, SCG can better meet the demand for subsequent financing for its portfolio companies. Also, by having invested in a variety of portfolio companies in different stages and industries, SCG can more easily decide when to sell and how much to sell of its investments in the secondary stock market to meet the annual profit goal set by SASAC. Table 2 summarises the benefits of SCG's expansion strategy.

[Insert Table 2 here]

By adopting the expansion strategy, SCG, in fact, established a link between its current performance and its future fund-raising. As all interviewees mentioned, setting up the link is not a deliberate policy but a direct result of the new strategy. The VC life cycle indicates the cycle of funds comes to an end when a VC firm exits from its portfolio companies and repeats from a new round of fund-raising. Therefore, performance today is crucial for fundraising tomorrow, as this influence serves as an incentive for VC firms to exert optimal effort in selecting and nurturing their portfolio companies. Figure 1 and Figure 2 compare SCG before and after its expansion strategy in 2006. A fundamental distinction is that after adopting the new strategy, a link between its investment performance and future fund-raising was set up, and SCG overcame one of the biggest obstacles to GVCs in solving agency problems.

[Insert Figure 1 and Figure 2 here]

3.2 Reform of SCG

SCG's expansion strategy coincided with some other reforms, which also had a profound impact on the company. First, SCG improved the procedure of project screening and decision-making to make sure all potential deal flows are screened following the same procedure. This reform mitigates the political pressure on SCG's decision-making. Secondly, to provide better incentives to its employees, SCG adopted a carry-like bonus and required investment teams to invest at least 1% of the total investment in their portfolio companies in order to align the interests of the staff and the company. Thirdly, all the staff of SCG are entitled to follow the investment made by the company and invest up to 15% of the total investment by the company in any project.

Table 2 lists the new strategies and reforms taken by SCG since 2006 and the main benefits of these reforms. Appendix 1 and Appendix 2 provide details on different aspects of the reforms mentioned by the interviewees and the procedures of decision-making by the Investment Committee.

We should notice that the reforms of SCG still have limitations. First, SCG's centralised investment decision-making mechanism is a trade-off between prudence and flexibility. As pointed out by some interviewees, some investment

opportunities had been lost due to the complicated procedure. Secondly, the impact of following-up investment by staff is quite limited in practice. As one interviewee pointed out, projects with the highest follow-up investment by colleagues have not ended up generating the highest return. One explanation is that the monitoring effect among colleagues is not as effective as expected.

3.3 Impact of new strategies and reforms on performance

The expansion strategy resulted in a historically high number of investment rounds and IPOs for SCG. Before 2006, SCG ranked second among the main GVCs in China based on the number of investment rounds (only first round non-syndication investments in portfolio companies are counted here) and IPOs (see Figure 3). By the end of 2010, SCG had become the largest and the most successful GVC in China, with the number of investment rounds and successful exits through IPO being more than twice as many as the second-placed GVC (see Figure 4).

[Insert Figure 3 and 4 here]

However, is the increase in successful exits of SCG driven by its increased cases of investments or its improved efficiency in investing? One objective measure of performance is the return on investment. If the expansion strategy and other reforms have improved the performance of SCG, it should have a higher return from its investments than other GVCs.

Hypothesis 1: Investments made by SCG have a higher return than those by other GVCs in the period after SCG adopted its expansion strategy in 2006.

A stricter measure of performance is a VC's capability of screening and nurturing portfolio companies. In the scenario of syndication, two or more VC firms invest in the same portfolio company, while the lead VC firm of the syndicate plays a vital role in screening and providing value-added activities to the investee. In the scenario of staged financing, VC firms that invest in the first round play an essential role in recognising the potential of start-ups and providing certification for the portfolio company to other VCs that may join in the later rounds of financing. Therefore, the success of a portfolio company, to a certain extent, reflects the capability of its dominant VC firm—the one that leads the investment in the initial round of VC financing.

SCG's expansion strategy and reforms had an impact on its core competency, not only through economies of scale but also through better-aligned interests and less distortion from political pressure. Therefore, SCG is expected to outperform other GVCs after 2006 using the stricter performance measure for VC firms.

Hypothesis 2: Portfolio companies that receive their initial round of VC financing from SCG or SCG-led syndicates are more likely to achieve successful exits through IPO or M&A than those backed by other GVCs after 2006.

4 Model and Data

4.1 Models and samples of two performance measures

The preferred measure to compare the return on investment is to look at the financial return (e.g. internal return rate). However, it is hard to collect data on exact returns since the VC industry is exempt from disclosing detailed information on their investments. VC firms voluntarily disclose their performance, which leads to the potential bias that we can only observe successful exits with a high return rate.

An alternative way to measure return on investment is to look at the successful exits of investments through IPO/M&A because the information about IPO/M&A is public and reliable. Cochrane (2005) finds that late-stage investment is "steadily less risky" with smaller "mean returns, alphas and betas". Therefore, it is meaningful to compare the success rate of early and late stage investments for SCG and other GVCs in separate models.

$$IPO/M\&A_i = \alpha + \beta_1 SCG_i + \beta_2 Post + \beta_3 SCG_i \times Post_i \quad (1)$$

Equation (1) looks at all early (late) stage investments by SCG or other GVCs, where the dummy variable *SCG* indicates whether an investment *i* was made by SCG, and another dummy variable *Post* indicates whether the investment was made after 2006. The dependent variable *IPO/M&A* equals one if the investment has achieved a successful exit through IPO or M&A. SCG' s early stage investments are compared to the early-stage investments made by other GVCs in one regression, while another regression compares the performance of late-stage investments. The unit of observation is the unique pair of VC firms and their investees, which forms when a VC firm invests in a portfolio company, no matter

in which round and no matter through sole investment or syndication. If a VC firm has invested in several rounds of financing in a portfolio company, only the first time the VC firm gets involved is included in the sample. One portfolio company may appear several times in the regression if it has been invested in by several VCs[2]. There are 1,212 investments in total, among which 436 are early-stage investments, and 776 are late-stage ones.

The reason for not including control variables in Equation (1) is that I compare the return on all investments by SCG with all investments by other GVCs. It does not matter what characteristics the VCs had when they made the investment, and it does not matter whether they did it alone or through syndication. As long as an investment gets a successful exit, it is regarded as a successful investment.

Furthermore, it is not possible to control for a variety of VC characteristics in Equation (1). One portfolio company is likely to be invested in by several VCs (either through syndication in the same round or through receiving financing from different VCs in different rounds). In both cases, the characteristics of the VCs are different but they are making an investment in the same portfolio companies. For example, VC A and VC B co-invested in Company X in the first round, and VC C invested in Company X in the second round, and later on, Company X got listed on the stock market. In Equation (1), it only matters that an investment by VC A, an investment by VC B and an investment by VC C all succeeded. However, it is impossible to control the characteristics of VC A when I use its investment in Company X as one observation, and control the characteristics of VC B (C) when having VC B (C)—Company X as a second (third) observation.

The sample in Equation (1) enables us to get a first expression of the overall performance of all the investments by SCG compared to other GVCs. However, SCG can achieve a better return on investments if it chose to engage in more investments as co-investor rather than the lead VC or chose to do follow-on round investments rather than searching and screening projects and leading the first round of investment. I, therefore, use the following equation to further investigate the core competency of SCG compared to other GVCs.

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2 For example, if VC A and VC B invest in Company X in the same round, each pair of a VC firm and the portfolio company forms an observation (VC A—Company X, VC B—Company X).

$$IPO/M\&A_i = \alpha + \beta_1 SCG_i + \beta_2 Post_i + \beta_3 SCG_i \times Post_i + Controls_i \quad (2)$$

Equation (2) looks similar to Equation (1) but has different samples. In Equation (2), each portfolio company is a unit of observation and appears only once in the regression. During the sample period, 598 portfolio companies received their initial round of VC financing from a sole GVC or a syndicate among GVCs; therefore, the sample size is 598 for Equation (2). *SCG* indicates whether a portfolio company received its initial round of VC financing from SCG or a syndicate led by SCG. *Post* indicates whether the first round of VC investment that a portfolio company got was after 2006. *Control* includes a bundle of control variables that represent the characteristics of the investment and the VC firm that is leading the first round of financing in the portfolio company *i*.

Equation (2) measures the likelihood of achieving successful exits through IPO or M&A for a portfolio company when it is backed by a certain VC firm. In other words, it investigates the capability of a VC firm in selecting and nurturing its portfolio companies after controlling for the following observable factors that may affect the success rate of the investment.

4.2 Control variables

In Equation (2) when measuring the performance of VC firms by their capability of screening and nurturing their investees to achieve successful exits, I control for the characteristics of VC firms and portfolio companies. These are explained as follows.

4.2.1 VC firms' Characteristics

Scale equals the total value of investments by a VC firm in the five years prior to the focal investment[3], as the proxy for funds under the management of a VC firm. Gompers *et al.* (2012) attribute the success of SCG to the expanding size of its funds under management. To control for the possible concave relationship between the VC firms' experience and the performance of their portfolios (Gu & Lu, 2014), I also add the quadratic term of *Scale* in the regression.

[3] PEdata has a large number of missing values for funds raised each year. Many VC firms made investments without any records of fundraising in the sub-data source of funds in PEdata. Thus, it is less reliable to use the sum of total funds raised by a VC firm as the proxy for its funds under management.

Industry Experience counts the accumulated investment rounds done by a GVC in the same industry as the focal investment. Researchers find that a better understanding of a specific industry enables VC firms to develop their portfolio companies more successfully (Bottazzi *et al.*, 2008; De Clercq & Dimov, 2008; Hopp & Lukas, 2014). I also add the quadratic term of *Industry Experience* in the regression to control for the possible concave relationship between the VCs' experience and their portfolio companies' success.

Local indicates whether a GVC's headquarters is located in the same province as its portfolio company. Geographic proximity is regarded as an advantage for VC firms as it keeps consistent contact with their investees, allows them to screen and monitor their investments (Sorenson & Stuart, 2001; Tian, 2011b) and is an important signal of privileged access to local public resources for GVCs. When SCG adopted its expansion strategy in 2006 and set up GBFs with other local governments, it acquired new local resources in a wider range of geographic areas. Thus, I adjust the value of *Local* to one if the investments were made by SCG outside of Shenzhen but in those areas where they had established GBFs with the local government to control for SCG's newly acquired local advantages.

Syndicate indicates a portfolio that company receives its initial round of investment from a syndicate rather than a sole VC firm. Syndicate-backed firms are more likely to achieve a successful exit (Tian, 2012) than those backed by a sole VC.

4.2.2 Portfolio companies' Characteristics

Amount measures the value of the first round of investment in millions of US dollars that a portfolio company receives. The amount of the first-round investment is an indicator of the valuation of the project and reflects the risk assessment of the project by venture capitalists (Brander *et al.*, 2015). The higher the investment amount, the lower the implied risk that is associated with the project.

Early indicates whether the initial round of VC financing that a portfolio company receives is in the seed or early stage. Early stage investment is believed to have a higher risk, and hence, a lower possibility of going public (Bottazzi *et al.*, 2008; Hochberg *et al.*, 2014; Sorensen, 2007). For the missing values of the investment

stage in PEdata, I augment the data by comparing the investment date and the establishment date of an enterprise. If the difference is within two years, then I define it as an early stage investment. A similar definition of early-stage investment is also used by Cumming *et al.*(2017).

Cluster indicates whether a portfolio company is located in Beijing, Shanghai or Guangdong—the three clusters of VC investments in China with the advantages of accessing IPO opportunities (Pan *et al.*, 2016). Furthermore, companies located in the three clusters also enjoy an information-sharing effect, and, therefore, are expected to perform better.

Industry and *Year* fixed effects are included in Equation (2) to capture the different levels of risk associated with different industries and investment in different years.

Table 3 summarises the definitions of all variables.

[Insert Table 3 here]

4.3 Data and descriptive statistics

I get data on VC investments from PEdata, the most widely used commercial database for VC investments in China. I augment the database with CSMAR (China Stock Market Accounting Research) to crosscheck the IPO records.

The sample in Equation (1) includes all investments made by GVCs between 1999 (when SCG was founded) and the end of year 2010, which leaves at least five years to achieve exits by the end of 2015 when the data for this research was collected. I drop investments made in 2006 to have a clear contrast before and after SCG carried out its expansion strategy.

Panel A of Table 4 lists the early and late stage investments by SCG and other GVCs before and after 2006. With only a small proportion of investments in early-stage projects, both SCG and other GVCs saw a dramatic increase in late-stage investment after 2006, especially for SCG.

[Insert Table 4 here]

Panel B of Table 4 compares portfolio companies backed by SCG and other GVCs regarding their exit performance and the control variables. The portfolio companies in the two groups show no significant difference in the likelihood of

achieving IPO or M&A. However, SCG did invest in different companies compared to other GVCs. SCG had less early-stage investment and was more likely to choose portfolio companies located in Beijing, Shanghai or Guangdong to invest in. The investment amount for SCG was also larger than other GVCs. SCG also showed different characteristics from other GVCs. It had more funds under management, thanks to its expansion strategy and accumulated more experience than other GVCs. However, SCG's investments were less likely to be limited to the location of its headquarters and other provinces where SCG set up GBFs with the local governments. Furthermore, SCG is more likely to engage in syndication investment than other GVCs.

5 Regression results

5.1 Return of all investments

I first compare the return on investment for SCG and other GVCs before and after 2006 when SCG undertook its expansion strategy and a series of reforms. I run two logistic regressions using early-stage and late-stage investments as samples respectively as the specification of Equation (1). The regression results are reported in Table 5.

[Insert Table 5 here]

Column (1) and (2) report the return on early and late stage investments respectively. In early-stage investment, the estimated coefficients of *SCG* and its interaction term with *Post* are positive but statistically insignificant. By comparison, for late-stage investment, the coefficients of *SCG* and *SCG*× *Post* are of the opposite signs.

Since the magnitude and the sign of interaction terms in non-linear models cannot be interpreted directly (Ai & Norton, 2003), Panel B reports the marginal effects of being an investment by SCG versus other GVCs on the probability of achieving a successful exit through IPO or M&A. We can see that SCG showed no outperformance in early-stage investment before 2006. However, after SCG adopted its expansion strategy and carried out a series of reforms, its early stage investments were more likely to have successful exits—the proxy for a higher rate of return. In contrast, SCG shows no difference from other GVCs in return on

late-stage investment before or after 2006.

Although the marginal effect of being an early-stage investment by SCG is statistically significant at the 1% level, the coefficient of the interaction term *SCG*× *Post* is statistically insignificant. I interpret the result with caution (Greene, 2009). The results of the marginal effects support Hypothesis 1, that SCG had a higher investment return on early-stage investment than other GVCs after 2006, while estimated coefficients suggest that there is no difference between the return on investment for SCG and other GVCs either before or after 2006.

5.2 Capability of screening and nurturing portfolio companies

I then compare SCG and other GVCs by looking at their capability of screening and nurturing portfolio companies before and after 2006. The sample is limited to portfolio companies that received their first round of VC financing from a GVC or a syndicate led by a GVC. I run the regression as the specification shown in Equation (2) and report the results in Panel A of Table 6.

[Insert Table 6 here]

Column (1) and (2) of Panel A report the results without controlling for the characteristics of the investments and the VC firms that may have an impact on the success rate of the portfolio companies. The specifications that are shown in Column (3) and (4) control for the features of the investment (*Amount, Early*) and the features of the VC firm that led the investment (*Industry Experience, Scale, Local and Syndication*) in a portfolio company. The marginal effects of being backed by SCG versus being backed by other GVCs before and after 2006 are listed in Panel B of Table 6. Portfolio companies backed by SCG are more likely to achieve a successful exit through IPO or M&A that those backed by other GVCs. The regression results support Hypothesis 2.However, SCG's outperformance in screening and nurturing investees can only be observed after its expansion strategy. Before 2006, portfolio companies backed by SCG show no statistical difference in the success rate of achieving IPO or M&A.

The estimated coefficients of other control variables are as expected. The industry experience of VC firms shows a concave relationship with the success rate of their portfolio companies, which implies that VC firms benefit a lot from the experience obtained from their first investments in a certain industry, but the

positive effect disappears when a VC firm's accumulated experience in that industry reaches a certain level. Early stage investment is harder to get successful exits, while being backed by local GVCs and being backed by syndication enable portfolio companies to have a higher success rate.

The results provide evidence that besides the benefits that SCG's expansion strategy has brought to the company (including an increase in funds under management, more accumulated experience in a variety of industries, more opportunities of syndication with other VCs, and convenient access to local resources in more geographic areas), SCG's capability of screening and nurturing portfolio companies has also been improved compared to other GVCs. One possible explanation is that the expansion strategy linking SCG's investment performance and fund-raising has created effective incentives. Furthermore, a fairer decision-making process and a better remuneration scheme might also have helped to improve the core competency of SCG.

5.3 Alternative explanations

In 2010, SCG expanded its equity from RMB 160000 to RMB 250133.9 by introducing three private shareholders. Is the outperformance of SCG caused by the private shareholders that may (1) change the incentive mechanism of the company and (2) expand the network of accessing to deals and nurturing portfolio companies?

The answer lies in the ultimate purpose of adding these three private shareholders. The main reason, explained by the interviewees, is to bypass a policy restriction of the central government. In 2009, the State Council passed *The implementation of transferring part of state-owned shares in the domestic stock markets to enrich social security funds*. The purpose is to add funding resources to the national pension funds. Under this regulation, state-controlled enterprises that are listed on the domestic stock market should transfer 10% of the total value raised from their IPOs to the national pension funds. Obviously, the transfer will affect the financial return of GVCs if a portfolio company's controlling shareholder is a state-owned enterprise.

To circumvent the restriction caused by this regulation, some GVCs sought a way to reduce the percentage of shares directly held by their local governments (Feng,

2017). In mid-2010, SCG had Liye, Xinghe, and Septwolves as its new shareholders and, as a result, the percentage of shares held by Shenzhen local government through its controlling enterprises decreased to 49%. By having the three new shareholders, SCG was exempt from transferring its equities to the national funds.

However, as mentioned in Section 2, the Shenzhen local government's total shares in SCG through direct and indirect controlling enterprises were 53.44% after introducing the three new private shareholders. The CEO and the chair of the board were still appointed by the local government, and the local SASAC continued to supervise and assess the performance of SCG. The additional private shareholders did not change the fact of SCG being a GVC.

Apart from circumventing the statutory hurdle of transferring equities to national pension funds, the interviewees confirmed that the new private shareholders had no impact on either the incentive mechanism or the networking development of SCG. The compensation scheme of SCG was clarified in 2006 and has not been materially revised since. The new private shareholders had no experience in venture capital investment[4] and had barely been involved in introducing potential deals or nurturing portfolio companies for SCG. Although I cannot entirely rule out the impact of the new private shareholders on the performance of SCG, the evidence provided by the interviewees does not identify the private shareholders as one explanation for SCG's outperformance after 2006 compared to other GVCs.

6 Conclusion and discussion

This paper explores the possible channels to improve the performance of governmental venture capital firms by analysing the case of Shenzhen Capital Group. Specifically, I investigate the impact of SCG's expansion strategy, which the company carried out in 2006, on its performance. I use the data collected from interviews and direct observation, and the database PEdata to do both qualitative and quantitative analysis. Information collected from the interviews and the

[4] Liye and Xinghe are real estate development companies and Septwolves is a company with its main business in garment production and sales.

observation confirms that SCG's expansion strategy has enabled the company to benefit from economies of scale and brought a change to the company's VC life cycle by setting up the link between its current investment performance and future fund-raising. A series of reforms in SCG that paralleled its expansion strategy have also enhance the governance of the company.

Using two measures to compare the performance of SCG with other GVCs before and after its expansion strategy, I find that:

(1) When taking into consideration all investments made by SCG and other GVCs, SCG outperformed in early-stage investment after carrying out its expansion strategy;

(2) When looking at the capability of VC firms in screening and nurturing investees, portfolio companies backed by SCG or by SCG-led syndicates are more likely to achieve successful exits than other GVCs. I obtain the results by controlling for the observed changes in SCGs—more accumulated experience, economies of scale, expanded networking and more local favourable resources—due to its expansion strategy. Therefore, the link set up between SCG' performance and fund-raising, its improved decision-making process and a better designed remuneration scheme provide a possible explanation for the success of SCG.

This research has important implications for policymakers. To mitigate the agency issues of GVCs and achieve better corporate governance and better-aligned interests between shareholders and employees, I suggest two possible channels to improve the performance of GVCs. On the level of the VC firm, empowering local GVCs to raise funds is an effective solution to overcoming the low incentive obstacle of GVCs. On the level of the individual venture capitalist, a performance-based compensation plan for retaining talents in the VC industry is essential.

Although local SASACs still adopt the annual assessment mechanism in evaluating the performance of GVCs as other SOEs, some local governments begin to explore more effective assessment, which can motivate the managers of GVCs to achieve better performance. For example, the SASAC in Shenzhen initiated the combination of tenure assessment and annual assessment in 2015 by emphasising that the tenure assessments "should have different goals in different industries" (State-owned

Assets Supervision and Administration Commission of Shenzhen Municipal, 2015). As a supplementary to annual assessment, tenure assessment takes place every three or four years according to the tenure of the CEOs of SOEs. In late 2016, the State Council initiated the *Opinions on promoting the sustainable and sound development of the venture capital industry*, and for the first time explicitly emphasised that SASAC should work toward to design a better supervisory and assessment mechanism on GVCs to reflect the characteristics of the VC industry. The new mechanism, as stated in the policy, should "promote entrepreneurship and tolerant failure". Future policies should better reflect the characteristics of venture capital industry and promote GVCs' long-term strategies.

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Appendix 1: Summary of Interviews

I conducted the interviews with ethics approval (Ref. 016603) granted by The University of Auckland on 13 Jan 2016. The main purpose of the interviews is to understand the mechanism that led to the success of Shenzhen Capital Group (SCG hereafter) after it adopted a strategic reform in 2006.

In the week of 20 to 24 June 2016, I interviewed six managers who held senior positions at SCG. Five of them are the directors of different departments (Risk-control, Fund management, Investment, Research Centre and Investment Committee), and the other one is the head of Shanghai branch office. Choosing directors of departments/branch offices rather than the CEO or entry-level staff as interviewees is reasonable because they are familiar with both the initiation of the strategies and the first-hand execution of the strategies in practice. All interviewees joined SCG before 2006 and have worked at SCG ever since. Therefore, they are in good position to talk about the strategy taken by SCG since 2006.

The interviews were conducted at the premises of SCG's headquarters in Shenzhen, except for one at SCG's branch office in Shanghai. On average, each interview lasted for about one hour. No interview was recorded as requested by the interviewees.

Interview questions were structured around the following four aspects:

- The motivation of SCG's expansion strategy since 2006
- The main strength SCG relied on to successfully get cooperation with other local governments
- Other factors besides its expansion strategy that contribute to the success of SCG, and
- Their opinions on the connection between investment performance and future fundraising.

The interviews were carried out by asking interviewees several semi-structured questions. Semi-structured interviews are widely used in research on the venture capital industry (Kalidas *et al.*, 2014; Pukthuanthong & Walker, 2007; Avnimelech *et al.*, 2007) to obtain practitioners' insights into various factors that affect the

behaviour and performance of the VC industry. The semi-structured interviews were open to any issues raised by the interviewees and were focused on different aspects according to the position of the interviewees in the company. The information provided by previous interviewees was presented to later interviewees for validation.

Since all the participants preferred not to have a recording of the interviews, I summarise the interviews based on the notes taken during the interviews. To avoid ambiguity, I asked follow-up questions via emails to confirm the exact interpretation. The final step was to contact the interviewees to validate my final summary of their own discussions.

The content of the interviews is summarised as follows. The duplicated or very similar opinions of different interviewees are presented as one item.

Question 1: What is SCG's motivation for adopting the expanding strategy since 2006?

- To achieve economies of scale through raising funds from other local governments. We used to invest using SCG's corporate equity only, most of which failed to generate profit and suffered from a very low level of liquidity. Since 2006, the typical structure of the funds SCG raised is 1/3 from other local government, 1/3 from private investors (mainly well-known local enterprises with a close tie with the local governments), and 1/3 from SCG's own capital.
- SCG had successfully exited from some portfolios due to the split-share structure reform since 2005 (when the untradable shares became tradable). The expansion strategy since 2006 is to further strengthen the confidence in investment.
- To access more potential projects outside of Shenzhen.
- To benefit from the favourable conditions in the investment contracts if some local governments waive their claim on the extra return on investment.
- To leverage the opportunity of the ChiNext (the second board, like NASDAQ) being released on ShenZhen Stock Exchange after 2006.

- To follow the policy of the central government to promote government-guided funds since 2006.
- To follow SCG's four principles which were explicitly stated when SCG was established in 1999: governmental guidance, market-oriented operation, following market discipline, and learning from international conventions.
- To follow the spirit of ShenZhen Municipal Government—*Exploring and Reforming*.

Question 2: What is the main strength of ShenZhen Capital Group in successfully getting cooperation with other local governments?

- SCG's governmental background. Other local governments thought SCG was more reliable than private VC firms in the 2000s.
- SCG's variety of investments and its convincing track record of successful exits from previous investments. The local governments also cared about how an industry is developed for the local economy and what kind of "superstar" companies SCG had nurtured. The "superstar" companies are not necessarily public companies listed on stock market. Those showing a significant impact on the industry with a high growth rate or possessing high-end patents in a specific high-tech field are all convincing evidence as SCG's capability of selecting and nurturing portfolio companies.
- SCG's reliable and high-quality management team and market-oriented management mechanism.
- The mandates of the government-backed funds (GBFs) explicitly stated that a certain proportion of the funds raised should be invested locally. Therefore, the local government hoped to see potential growth in GDP, tax contributions, employment and the overall competitiveness from the local investments made by the new funds.
- SCG's high proportion of commitment in the GBFs. As both the limited partner (the providers of 1/3 of the fund) and the general partner (acting as the fund management team), SCG contributed 1/3 of the commitment in the newly established GBFs. In contrast, the common practice in the VC

industry is general partners invest 1% of the funds under their management, whilst 99% is contributed by limited partners. The local governments—as the limited partners who provide part of the commitment—regarded this arrangement as a more effective way for aligning the interests of the general partners and limited partners.

- Local governments desired to change how they support the development of the local economy, from an administrative-based mechanism to a more market-oriented way. The cooperation with SCG provided the local governments with a good alternative in the transition. By investing one dollar in GBFs, local governments can leverage another two dollars to support the local industry and economic growth.
- As the earliest and the only GVC that adopted the expansion strategy to established GBFs with local governments in 2006, SCG had almost no competition from other GVCs until late 2009.

Question 3: Are there any other factors contributing to the success of SCG besides its expansion strategy?

(1) The incentive mechanism

- A market-oriented mechanism of recruitment (only the chair of the board and the CEO are appointed by the government).
- 2% of the return on investment that exceeds the pre-set goal is allocated to the team members as a bonus, after subtracting the fund cost (6% annually), the cost incurred in investment (e.g. the cost of due diligence and the cost of monitoring and nurturing activities, etc.), and the net loss in previous projects made by the investment team members. This policy was carried out in 2006 after Mr HaiTao Jin became the board director of SCG.
- 8% of annual profit is allocated as a bonus to the whole company. The allocation is according to the job level of the staff. It is not directly related to the performance of any specific investment team.
- A binding policy that the management team must put in money of their own that is equivalent to 1% of the total investment amount in their portfolio companies. The policy was also adopted in 2006.

- The follow-up investment mechanism for all employees. All SCG's employees are entitled to follow the investment made by the company. SCG set up a cap (15%) on the percentage of the employees' share in the total investment. The employees can voluntarily decide which project to invest in and how much to invest in. The investment by SCG's employees follows the rule of "same share, same interest" and the employees are fully responsible for their personal investments.

(2) The investment decision-making mechanism

- The Investment Committee of SCG exercises full discretion on investments smaller than 80 million RMB (approximate 12 million USD). Investment exceeding 80 million RMB should be referred to the board of directors. Projects which are more than 5% of its overall managed funds should be referred to the general meeting of shareholders.
- The Investment Committee consists of 11 members including the chair of the board, the CEO, all Vice Presidents, the directors of the main departments and the head of the main divisions in different areas. All staff of the company can sit in on the Investment Committee meeting to get information of on proposed projects.
- The chair of the board and the CEO have the power of veto (to unilaterally stop an official action) over the project under discussion. But for approving a project, the chair of the board and the CEO have the same weight of vote as other investment committee members (one person one vote). This is to ensure that the decision-making process is not driven by any specific person regardless of his/her administrative level in the company. This also serves as a mechanism to ensure that any projects recommended by government officials will be evaluated following the same procedure as other projects.
- The Investment Committee meeting ensures fairness and standardization, albeit dampening its efficiency to some extent. The decision on all projects, including those undertaken by divisions in different geographic areas, must be made by the Investment Committee that is located in the

ShenZhen headquarters. Generally, it takes 3-4 months from the first due diligence to the final investment decision.

(3) The role of local SASAC (State-owned Asset Supervisory and Administration Commission)

- Like other SOEs, SCG is under the supervision of the local SASAC. SCG's financial performance—the annual profit rate—is part of its annual assessment that is carried out by the local SASAC. Since the company holds a variety of portfolios at different investment stages, SCG can decide when to sell the shares it holds in the secondary share market to meet the annual profit rate goal set by SASAC.
- The annual assessment by SASAC does not force SCG to pursue short-term profit returns by sacrificing the long-term returns because the company has large scale funds under management and can easily meet the annual goal of ROE by selling a small proportion of the shares at the best timing.
- Since its establishment in 1999, SCG had an agreement with its shareholders that the company has discretion on allocating 8% of the annual profit to its employees as a bonus. The allocation of the bonus follows the hierarchy in SCG. If the bonus that the chair of the board and the CEO receive exceeds the cap on the bonus the directors and managers of state-owned enterprises may get, the chair of the board and the CEO of SCG may pool the extra bonus in the investment in SCG's portfolio companies as their personal investment. This arrangement enables the chair of the board and the CEO of SCG to be motivated without breaking the regulations of the SASAC on the remuneration of state-owned enterprises.
- SCG hopes that, in future, the annual assessment by SASAC can be replaced by a long-term assessment (e.g. the tenure assessment of the director and CEO) to reflect the characteristics of the VC industry and to enable SCG to focus on long-term goals better.

(4) Network set up by SCG

- SCG organizes an Investment Entrepreneurs Club twice a year. The company invites its portfolio companies, upstream and downstream companies in the industry chain, banks, officials from the local government and the stock supervision committee to a variety of club activities. The platform provides a good networking opportunity for their portfolio companies to set up a close tie with their potential partners and as a result, contributes to the success of SCG.

Question 4: Do you agree that one of the main factors driving the success of ShenZhen Capital Group is the link set up between its current performance and future fundraising?

- When cooperating with other local governments to establish GBFs, SCG focused on providing convincing track records to the local government. Once the local government agrees on a commitment, SCG relies on the impact of the local government to raise the other 1/3 of commitment from local state-owned or private companies.
- Setting up the link is not the motivation of SCG's expansion strategy. However, it did create a link between current performance and future fundraising in practice.
- Other GVCs do not have the pressure of raising funds. They have no links between investment performance and personal compensation either.

Appendix 2: Summary of observation

On 22 June 2016, with the consent of the Investment Committee of the company, I sat in on the Investment Committee meeting and observed the whole process of how they evaluated a proposed project and how they made an investment decision. The following summary of SCG's decision-making mechanism, especially the procedures of the Investment Committee meeting, is based on the information collected through both interviews and observation.

Firstly, only projects with a two-thirds majority of votes by the Investment Committee can get approval. The Investment Committee of the company has eleven members: the president, general manager, assistant general managers, directors of main departments, and head of subsidiaries in different areas. All staff of the company can sit in on the Investment Committee meeting to get information about the projects under discussion.

Secondly, although the president and the general manager are appointed by the local SASAC, they have the same voting power as other Investment Committee members—*one man one vote*. This arrangement is to ensure that the decision-making process is not driven by any specific person regardless of his administrative position in SCG. It also serves as a mechanism to ensure that any projects recommended by government officials will be evaluated following the same procedure as other projects. The only substantial additional right of the president and the general manager is their power of veto (disagreement on the project under discussion). Projects that are not beneficial to the local economy can be eliminated from the potential portfolios.

Thirdly, the Investment Committee exercises considerable discretion in decision-making. According to the regulations of the company, investments of less than 80 million RMB (about 13 million USD) are based on the voting results of the Investment Committee. Larger investments are referred to the Board of Directors for a decision. If the investment is larger than 5% of SCG's total assets (by the end of the preceding year), a general meeting of shareholders will be called. In practice, most investments are within the remit of the Investment Committee.

Fourthly, the procedure (listed below) followed by the Investment Committee ensures a comprehensive evaluation of the project under discussion.

1) Independence declaration by the investment team.
2) Investment proposal and due diligence report by the investment team.
3) Legal, financial and risk reports by the Risk Management Committee.
4) Industry analysis reports by the Research Centre.
5) Q&A between the Investment Committee and the investment team.
6) Discussion among Investment Committee members.
7) Q&A between the Investment Committee and the investee company.
8) Summary.
9) **After the meeting,** 11 members of the Investment Committee vote anonymously and provide detailed comments on the project under discussion. This process is carried out on the company's computer system without disclosing the choice of other committee members. This arrangement is to avoid that the opinions of the chair of the board and the CEO affecting the choice of their subordinates when voting openly by a show of hands.

The procedure applies to all projects of the company. Government-recommended projects, similar to other projects, are therefore evaluated equally and transparently. One interviewee mentioned, "the projects recommended by local governments are a treasure rather than a burden for us, as long as every project is, by all means, evaluated by our company. The close ties of those projects with local governments are sometimes strong evidence of a promising future."

Table 1. The evolution of shareholding of Shenzhen Capital Group (1999-2010)

DD/MM/YYYY Name of Shareholder	25/08 1999	03/08 2001	08/11 2002	20/12 2002	11/07 2005	16/03 2006	07/04 2008	14/08 2009	25/06 2010	Shares by SASAC
SASAC of Shenzhen municipality government	50000	83000	78200	53962	58112	58112	58112	58112	70525.75	**100%**
Shenzhen Investment Holdings Co., Ltd							32000	32000	32000	**100%**
Shenzhen Airport Corporation	3000	32000	32000	32000	32000	32000				**100%**
Shenzhen Yuanzhi Investment Co., Ltd										**100%**
Shenzhen Yixin Investment Co., Ltd			4800	4800	4800	4800	4800	4800	8284	**100%**
Shenzhen Yantian Port Group Co., Ltd		5000	5000	5000	5000	5000	5000	5000	5837.5	**100%**
Shenzhen Futian Investment Co., Ltd		5238	5238	5238	5238	5238	5238	5238	6115.37	**100%**
Shenzhen Public Transportation Group Co.,Ltd	2000	4150	4150	4150						**55%**
Shenzhen Energy Corperation	3000	4350	4350	4350	4350	4350	4350	4350	5078.63	**48.09%***
Shenzhen Expressway Co.,Ltd**	5000	5000	5000	5000	5000	5000	5000	5000	5837.5	**43.7%***
Shenzhen Shenbao Industry Co., Ltd	3500									**22%***
Guangshen Railway Co., Ltd	3000	3000	3000	3000	3000	3000	3000	3000	3502.5	
Zhong Xing ZTE	500	500	500	500	500	500	500	500	583.75	
Shanghai Dazhong Utility Group		2762	2762	32000	32000	32000	32000	32000	34847.5	
Shanghai Dazhong Enterprise Management Co., Ltd		5000	5000							
Guangdong Electric Power Development Co., Ltd		5000	5000	5000	5000	5000	5000	5000	9187.5	
Longxin Group Co., Ltd		5000	5000	5000	5000	5000	5000			
Hanhua Bonding Company Group Co., Ltd								5000	5000	
Shenzhen Liye Group Co., Ltd									11583.2	
Shenzhen Xinghe Real Estate Development Co., Ltd									40167.5	
Fujian Septwolves Group Co., Ltd									11583.2	
Sum of Share Value	70000	160000	160000	160000	160000	160000	160000	160000	250133.9	
Percentage of shares held by SASAC Shenzhen directly and indirectly	**95.00%**	**86.71%**	**86.71%**	**71.56%**	**71.56%**	**71.56%**	**71.56%**	**71.56%**	**53.44%**	

The shareholding information shown in this table is compiled by the author according to the website of State-owned Assets Supervision and Administration Commission of the People's Government of Shenzhen Municipality (http://www.szgzw.gov.cn/szgq/) and the annual reports of the companies included in the table.
*SASAC Shenzhen is the actual controller of the company.

Table 2 Strategies and reforms by Shenzhen Capital Group in 2006

Strategy and reforms	Description	Benefits
Expansion Strategy	• Set up Government-backed Funds with local governments outside of Shenzhen. • SCG, local government and other investors (local public or private companies) contribute 1/3 of a fund respectively, and SCG manages the funds as the general partner. • Convince local governments by SCG's track records of previous investments and successful exits.	• Broaden its channels of fundraising and deal flows. • Gain access to more favourable local resources. • Develop more insights into industries and better leverage its research team and risk control team, etc. • Meet the demand of its portfolio companies for subsequent financing and meet the annual profit goals set by SASAC more easily. • Set up a link between its current performance and future fund-raising.
Decision making procedure	• Investments that are less than $80 million RMB can be approved by the Investment Committee if more than 2/3 members agree. • The chair of the board and the CEO have the same weight of vote as other members. • The voting process is undertaken after meeting anonymously online, following the rule of one man one vote with the power of veto granted to the CEO and the Chair of the Board.	• Screen all projects following the same procedure to be fair and transparent. • Ensure that only projects meeting the criteria for investment are selected. • Show a real attempt to be independent of political pressure to vote anonymously after the Investment Committee meeting.
Remuneration Plan	• 8% of annual profit as a bonus to the whole company. • 2% of investment profit as a carry-like bonus to the investment team. • 1% compulsory following-up investment by the investment team. • Voluntary following-up investment by all staff • The CEO and the Chair of the Board can pool their bonus in the portfolio companies of SCG as their own investment.	• Align the interests of management and shareholders. • Align the interests of the investment teams and the management. •Avoid the cap on the remuneration for managers of state-owned enterprises required by SASAC

Table 3 Definition of Variables

Variable	Description
IPOorM&A	A dummy variable that equals 1 if the investment/portfolio company has achieved successful exits through IPO or M&A.
SCG	A dummy variable that indicates an investment is made by SCG, or a portfolio company's first round of VC financing is undertaken (or led) by SCG.
Post	A dummy variable that equals one if an investment is made after 2006 (in 2007 or later), or the first round of VC financing for a portfolio company is made after 2006; the dummy variable equals zero if an investment is made after 2006 (in 2005 or earlier).
Scale	The total of the investment amounts by a VC firm in the last five years prior to the focal investment. Proxy for funds under management for a VC firm. In the case of syndication, it equals to the lead VC firm's scale. The value used in the regressions is log (1+ *Scale*).
Industry Experience	The accumulated investment rounds in the focal industry done by a VC firm before it invests in the focal portfolio company. In the case of syndication, it equals to the lead VC firm's industry experience. The value used in the regressions is log (1+ *Industry Experience*).
Local	A dummy variable that equals 1 if the headquarters of a VC firm is in the same province as the portfolio company. In the case of syndication, it equals one if the headquarter of the lead VC firm is in the same province as the portfolio company. If the investment was made by a government-backed fund (GBF) established by SCG and other local government outside of Shenzhen, the value of *Local* is adjusted to one to reflect SCG's acquired local advantages.
Syndication	A dummy variable indicates two or more than two VC firms undertake the first round of VC financing for a portfolio company.
Amount	Investment amount for the first round of VC financing in a portfolio company in millions of US dollars. In the case of syndication, it equals the sum of investment amount of all syndication partners in the focal portfolio company. The value used in the regressions is log (1+*Amount*).
Early	A dummy variable that equals 1 if the first round VC investment in the portfolio company is in seed or early stage.
Cluster	A dummy variable that equals 1 if the portfolio company is located in Shanghai, Beijing or Guangdong—three clusters of VC investment in China.
Year	A set of mutually exclusive dummy variables that equal one if the first round investment in the portfolio company is in the year 1990 to 2010.
Industry	A set of mutually exclusive dummy variables that equal one if the portfolio company is in one of the following industries: Internet and Computers, Communication and Electronics, Biotech and Health Care, Consumer, Industry and Energy, Financial Services, and Others.

Table 4 Descriptive statistics

This table reports the descriptive statistics of the variables. Panel A reports the number of investments by SCG and other GVCs both in initial and subsequent rounds before and after 2006. The numbers in Column "Exit" count the successful exits of the investments through IPO or M&A. Panel B compares the characteristics of portfolio companies that received their initial round of VC financing from SCG or SCG-led syndicates with those by other GVCs.

Panel A	Early-stage Investment					Late-stage Investment				
Year	SCG	Exits	Other 58 GVCs	Exit	Diff	SCG	Exit	Other 60 GVCs	Exit	Diff
1999	0	0	19	8		1	0	5	3	
2000	4	1	32	14		5	2	25	13	
2001	5	3	31	15		5	3	19	13	
2002	4	2	23	4		4	3	12	4	
2003	1	1	39	9		1	1	27	6	
2004	3	0	29	9		1	0	18	7	
2005	1	0	34	11		3	1	24	11	
% of successful exits *Before 2006*		39%		34%	5%		50%		44%	6%
2007	6	2	37	7		26	17	70	38	
2008	10	2	34	9		41	25	90	41	
2009	5	2	38	13		47	16	108	51	
2010	9	6	72	18		68	26	176	78	
% of successful exits *After 2006*		40%		26%	14%		46%		47%	-1%

Panel B: portfolio companies	SCG	Other GVCs	Difference
IPOorMA	0.39	0.38	0.01
Portfolio companies characteristics			
Early	0.16	0.37	-0.21***
Amount	1.57	1.26	0.32***
Cluster	0.53	0.24	0.28***
VC characteristics			
Scale	5.31	3.16	2.15***
Industry Experience	2.91	1.23	1.68***
Local	0.53	0.90	-0.37***
Syndication	0.40	0.29	0.11***

Table 5 Return of all investments for SCG and other GVCs

Panel A reports the results of the logistic regressions for all investments by SCG and other GVCs. The sample in Column (1) includes early-stage investments, while Column (2) includes late stage investments. The dependent variable is the dummy variable *IPOorM&A* that indicates whether the investment has achieved successful exit through IPO or M&A. Panel B calculates the marginal effect of being an investment made by SCG compared to by other GVCs on the probability of achieving a successful exit. Values significant at the 1%, 5% and 10% level are denoted by ***, **, and *. Standard errors are reported in parentheses and are clustered by the location of VC firms.

Panel A: logistic regressions	(1) Early-stage investment	(2) Late-stage investment
SCG	0.22	0.25
	(0.18)	(0.21)
Post	-0.38	0.12
	(0.35)	(0.20)
SCG×Post	0.42	-0.28
	(0.35)	(0.20)
Year fixed effect	Yes	Yes
Industry fixed effect	Yes	Yes
N	436	776

Panel B: Marginal effects of investment by SCG	(1) Early-stage investment	(2) Late-stage investment
Before 2006	0.05	0.06
	(0.04)	(0.05)
After 2006	0.14***	-0.01
	(0.05)	(0.03)

Table 6 Capability of screening and nurturing portfolio companies

Panel A presents the logistic regression results with using whether the portfolio company has achieved a successful exit through IPO or M&A as the dependent variable. Panel B lists the marginal effect of being backed by SCG versus being backed by other GVCs on achieving successful exit before and after 2006.Values significant at the 1%, 5%, and 10% level are identified by ***, ** and *. Standard errors are reported in parentheses and are clustered by the location of VC firms.

	Expected sign	(1)	(2)	(3)	(4)
SCG	+	0.23	0.01	0.25	0.01
		(0.19)	(0.19)	(0.22)	(0.28)
Post		0.07	-0.21	-0.21	-0.57
		(0.20)	(0.40)	(0.18)	(0.39)
SCG × Post	-	-0.25	-0.04	0.67***	0.87***
		(0.20)	(0.21)	(0.24)	(0.29)
Scale	+			-0.28	-0.33
				(0.21)	(0.25)
$Scale^2$	-			-0.01	0.02
				(0.03)	(0.02)
Industry Experience	+			0.58***	0.53**
				(0.22)	(0.23)
$Industry\ Experience^2$	-			-0.16**	-0.18**
				(0.06)	(0.07)
Local	+			0.89***	0.99***
				(0.25)	(0.27)
Syndication	+			1.04***	0.92***
				(0.16)	(0.16)
Amount	+			0.21	0.22*
				(0.14)	(0.12)
Early	-			-0.82***	-0.85***
				(0.27)	(0.27)
Cluster	+			0.04	0.08
				(0.19)	(0.18)
Year fixed effect		No	Yes	No	Yes
Industry fixed effect		No	Yes	No	Yes
N		598	598	598	598

Panel B: Marginal effects of being backed by SCG vs by other GVCs on achieving successful exits	Not controlling for the characteristics of VC firms	Controlling for the characteristics of VC firms
Before 2006	0.01	0.01
	(0.04)	(0.05)
After 2006	-0.01	0.17***
	(0.02)	(0.04)

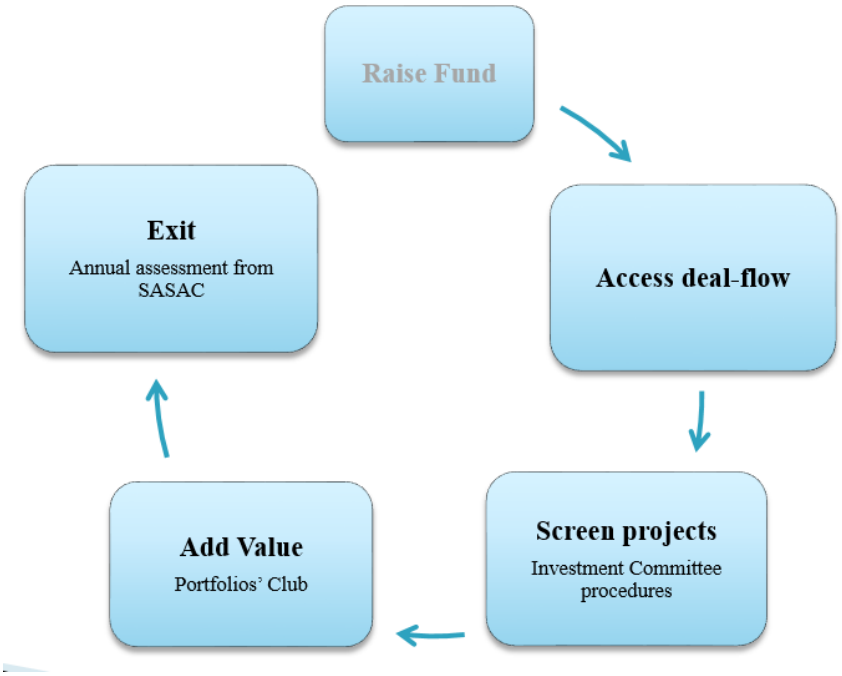

Figure 1 SCG before its expansion strategy

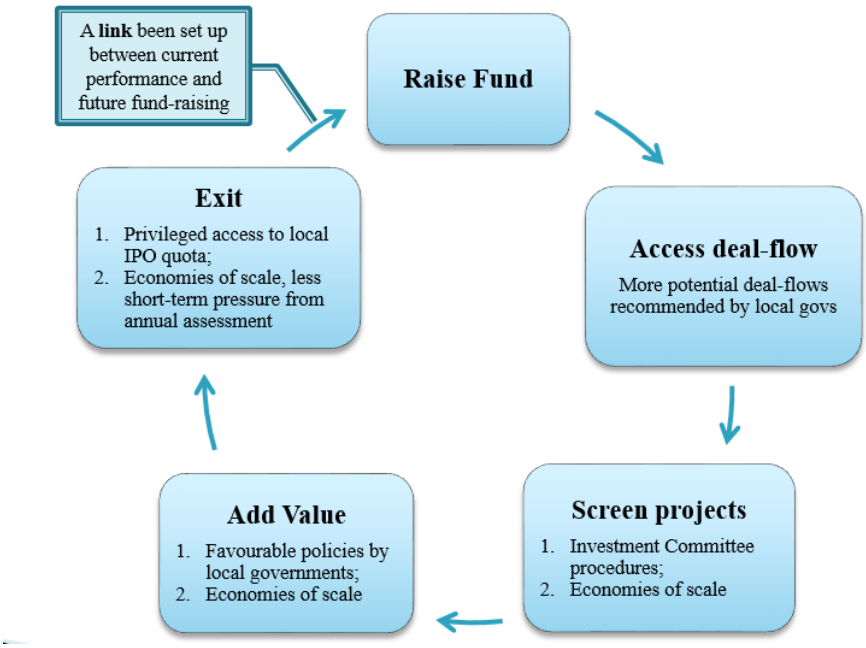

Figure 2 SCG after its expansion strategy

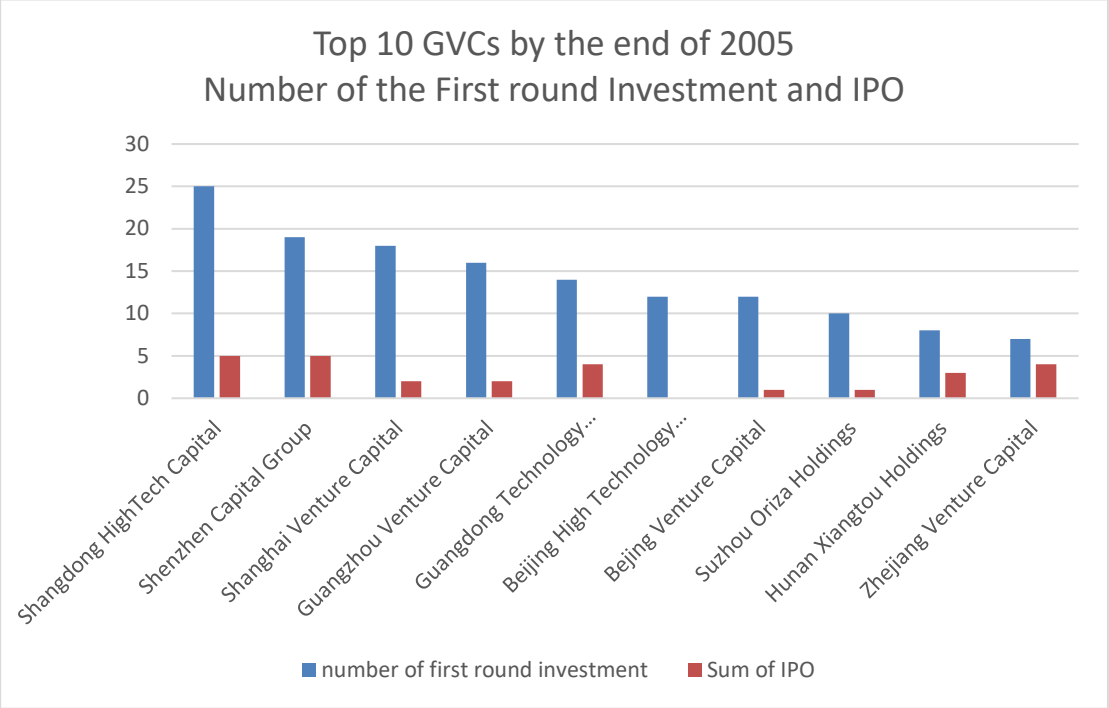

Figure 3 Top 10 GVCs by 2005 in China

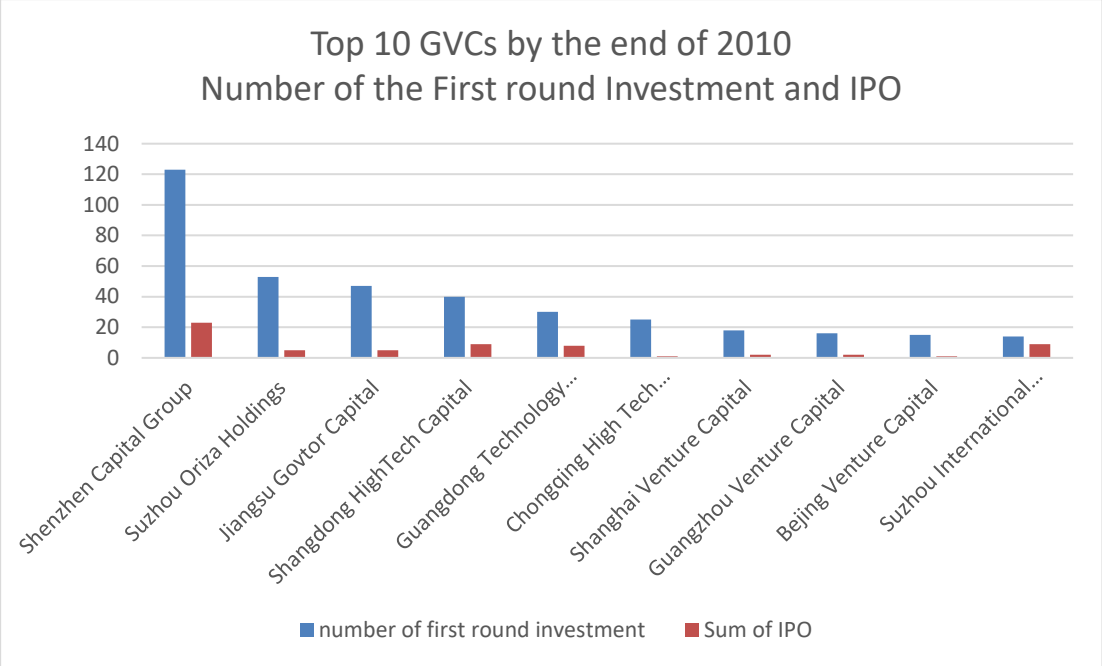

Figure 4 Top 10 GVCs by 2010 in China

Believe or not believe? The effect of religiosity on individuals' participation on reward-based crowdfunding projects

Francesca Di Pietro*
LUISS University
Rome, Italy
fdipietro@luiss.it

Francesca Masciarelli
University "G. d'Annunzio"
Pescara, Italy

Andrea Prencipe
LUISS University
Rome, Italy

Abstract

This paper aims to investigate the influence of religiosity of the geographical context in which entrepreneurs reside on the success of the crowdfunding projects. Relying upon an empirical analysis of about 4,000 individual investments through two Swiss reward-based crowdfunding platforms, we found that the people's religiosity decreases the likelihood of supporting crowdfunding project. This effect differs when considering the type of project: whereas religious affiliations are positively associated to humanitarian and social-oriented project financing, they are negatively associated to start-ups and technology-oriented projects. This study opens new research avenues by extending explanations for individual investment via crowdfunding. We identify religious belief as an antecedent to individual propensity to invest via crowdfunding and show that religions values have a different impact on the individual propensity to invest via crowdfunding depending on the nature of the project -technology vs social- oriented.

Keywords: reward-based crowdfunding, community religions, religious affiliation, geographical context, intra-country cultural diversity

Introduction

Community participation, conceived as the individual propensity to contribute to the society, produces several benefits for firms in terms of innovation (Laursen, Masciarelli and Prencipe, 2012a; Hauser et al. 2007), international business activities (Laursen, Masciarelli and Prencipe, 2012b), and more in general local economies (Putnam et al. 1993). Research contended that the individuals' participation in social activities is strongly influenced by the characteristics of geographical area in which the individuals (Alesina and La Ferrara, 2000) and company (Giugici, Guerini, Rossi-Lamastra, 2018) reside.

One of the tools that individuals have in order to contribute to the economic growth of firms is the reward-based crowdfunding, where people post their entrepreneurial projects aiming at raising important amounts of money (Younkin and Kashkooli 2016). The backers of the projects receive non-monetary benefits in return for the money they pledge, e.g. often the possibility of pre-ordering products or services (Belleflamme et al. 2013, p. 317). Being reward-based crowdfunding a less regulated phenomenon compared to for instance equity crowdfunding, and therefore easy and widely accessible financing mechanism, it is of paramount importance to better understand how the characteristics of the ecosystem can influence individuals' willingness to support entrepreneurial projects via crowdfunding.

To date, our knowledge of the characteristics of the geographical contexts where investors resides and how they shape their probability to contribute to reward-based entrepreneurial projects remains limited. A recent study contributed to the debate by focusing on the projects proponents' characteristics (Giudici et al., 2018), but did not consider the investors' perspective. This paper helps fill this gap by answering the following research question: *Do the characteristics of the geographical context where an investor resides affect individuals' propensity to support reward-based entrepreneurial projects*? In our view, this research question is highly relevant to the current debate on community participation within the economic geography (Guiso et al. 2004) and

crowdfunding literature (Giudici et al., 2018).

Individuals residing in diverse geographical areas are heterogeneous along many dimensions that may influence their willingness to invest in a reward-based crowdfunding. Prior research has found that geographical proximity between proponents and backers is beneficial for attract contributions (Agrawal et al. 2011; Ordanini et al. 2011; Mendes-Da-Silva et al. 2016), and that local altruisms and social capital positively affects the success of the reward-based crowdfunding campaigns (Giudici et al., 2018; Allison et al. 2015).

Understanding how the characteristics of the geographical area where investors reside affect their investment propensity in reward-based entrepreneurial projects is an interesting addition to this literature that clarify which are the external conditions that contribute to enhance community participation aimed at promoting entrepreneurial activities.

Along this line of reasoning, we argue that culture of people residing in a geographical area, influences the propensity of the local pool of potential backers to contribute to reward-based entrepreneurial projects. In particular, this paper focuses on the role played by local community religiosity and religious affiliations– important yet unexplored cultural aspects, as a primary source of moral injunctions and beliefs (La Porta et al. 1999; Siegel, Licht and Schwartz, 2011) – in affecting individual investing in crowdfunding projects in Switzerland.

We test our conjectures using a hand-collected dataset of about 4,000 individual investments through two Swiss reward-based crowdfunding platforms. Our choice to study Switzerland is due to its relatively homogeneity in terms of its general economic conditions while presenting intra-country cultural diversity of religious affiliations. Its peculiar historical and religious backgrounds have resulted in Swiss cantons hosting various combinations of Protestant and Catholic minorities and majorities. Additionally, the geographical distribution of the tradition of confession is determined historically and is persistent over time.

We find that on average the local community religiosity has a negative effect on the propensity to support reward-based entrepreneurial projects and this result is consistent among all the

different religious affiliations. However, we find the religious beliefs act differently based the nature of the project that one individual is willing to finance. We find that while Catholic, Protestant, and Muslim religious affiliations are positively associated to social-oriented investments via crowdfunding, they are negatively associated to investment in start-ups or new technologies.

Our study offers three contributions to the literature. First, it adds to the crowdfunding literature contributing to our understanding of type of ecosystem required to help crowdfunding flourish, providing evidence of an association between localized community religiosity and crowdfunding investments. Second, it adds to the literature on cross-cultural distance by exploring an additional cultural dimension to the ones proposed by Hofstede (Beugelsdijk, Kostova, and Roth, 2017: 31). Third, it responds to calls for studies of entrepreneurship in international settings (Gupta and Gupta, 2015; Wales, Gupta, and Mousa, 2013) by focusing on a country where different religious beliefs coexist. Conducting research in a multicultural setting provides a better understanding of entrepreneurial phenomena, and allows the development of more robust theories (Liñan and Chen, 2009).

Theoretical Background

Religion and crowdfunding investment propensity

Religion plays a key role in the lives of most people and is a longstanding drivers of human conduct (Jones, 1996; Elkins et al., 1988), and represent key cultural variables (Guiso, Sapienza and Zingales, 2003). Probably one of the most widely used definitions of religion is that it is, "any shared set of beliefs activities and institutions premised upon faith in supernatural forces" (Iannaccone, 2006). From a more normative perspective, religion is a form of social control and can be manipulated to create social order, used as a vehicle to transfer norms and define boundaries of what is right and wrong (Herbig and Dunphy 1998). At the macroeconomic level, a literature has emerged that seeks to understand the link between economic growth and religion. Weber (1905), was among the first to relate religion and risk taking, attributing the development of capitalism to Protestantism. Later

studies have used religion as a proxy for culture (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1999) for studying the government quality across countries. Stulz and Williamson (2003) found that a country's principal religion helps to predict the cross-sectional variation in creditor rights and it is an important predictor of how countries enforce rights. Barro and McCleary (2003) found that macroeconomic development has a negative correlation with church attendance across countries, whereas Guiso, Sapienza, and Zingales (2003) find that, across countries, religious beliefs are conducive to higher per capita income and growth.

Religious beliefs frequently play an active role in promoting certain kinds of behaviors and censoring others, with important repercussion for economic outcomes (Audretsch et al., 2007; 2013; Guiso et al., 2003; Putnam and Campbell, 2012). For example, the Protestant reformation changed beliefs about the pursuit of wealth not merely for personal advantage but as an individual responsibility (Weber, 1904). This change had a deep impact on individual behaviors giving legitimacy to the bourgeoisie to disrupt the existing order and introduce a new one, based on the pursuit of individual prosperity.

Polanyi (1944) regards religion as essential for the creation of markets and to moderate their possible excesses. Guiso et al. (2003) look at the effect of religion on trust and find that regular attendance at religious services induces higher levels of individual trust towards others. Hilary and Hui (2009) find that the firms in U.S. counties with a high level of religiosity exhibit a lower propensity to make risky choices and adopt risky strategies and, Barro and McCleary (2003) find that macroeconomic development has a negative correlation with church attendance. Parboteeah, Walter, and Block (2015) also show that the impact of religion on entrepreneurship is dependent on a country's investment in knowledge. Although some could easily argue that religions should constrain innovation as religions have been shown to encourage conservative decision-making and limit risks (Jiang et al. 2015).

The extant work infers that religion is an important part of counties' culture, which, in turn, indirectly influences the development of the firms and of the economy that are located in those counties.

Crowdfunding has recently emerged as a new form of fundraising, through the Internet, whereby a pool of people provides individual contributions to support a particular business idea (Allison et al., 2015; Mollick, 2014; Schwienbacher and Larralde, 2010). Recent studies have demonstrated the important role of geography in affecting crowdfunding projects' success (Agrawal, et al. 2011) and the characteristics of the local area of the proponents' projects (Giudici et al. 2018; Mollick 2014; Colombo et al. 2015a; Vismara 2016a; Vismara 2016b).

Given the impact of religion on related variables we, therefore, expect that there is a strong link between religion and the propensity to invest in crowdfunding projects. Moreover, due to the innovativeness of crowdfunding project and of the crowdfunding phenomenon itself, we posit:

Hypothesis 1: Religious beliefs have a negative effect on individuals' crowdfunding investment propensity.

Do different religions affect crowdfunding investment propensity differently?

Audretsch et al. (2007; 2013) suggest that some religions might be conducive to entrepreneurship, and that others might inhibit it. They found that Christians and Muslims tend to have a higher propensity to become entrepreneurs compared to Buddhists and Hindus. Their finding is confirmed in Metcalf et al., (1996); their study reveals that the influence of religion is one of the reasons why Pakistanis are less successful than Indians in self-employment because Islam prohibits the payment of interest on bank loans. Cousins (1996) claims that religious beliefs can dampen the entrepreneurial spirit. This applies to Buddhism which emphasizes the afterlife over practical activities. Also, religious beliefs affect women's decisions to start a business. Basu and Altinay (2002) found that since Muslims are generally more conservative than other religious groups in their attitudes to women working outside the home, fewer Muslim women than Muslim men start their own businesses. Religious beliefs influence the type of business the entrepreneur wants to launch. From a psychological perspective, Catholics should have a more "collectivistic" personality which values

social connections and group affiliation because Catholicism emphasizes sense of community and group ritual. Thus, Catholics should feel a deep sense of obligation toward the community which might induce them to subordinate their individual desires to the benefit of the collective good (Cohen and Hill, 2007). Stulz and Williamson (2003) further find that countries where Catholicism is the primary religion, exhibit low levels of creditors' protection rights, as anti-usury culture is pervasive in Catholic tradition.

Conversely, Protestants should have an individualistic personality that emphasizes personal goals, uniqueness, and personal control (Cohen and Hill, 2007). Protestants believe in the autonomy of conscience which is the ultimate judge of an individual's actions even if they conflict with established political or religious institutions. Protestantism compared to Catholicism is conducive to self-reflection, research, and investigation, and less inclined to mysticism.

Looking at different Western religions, research found that Jews are the least risk adverse and Protestants are the most, while Catholics are in the middle (Barsky, Juster, Kimball, and Shapiro, 1997). However, a more recent study find that Catholics and Jews can sometimes be more risk-averse (e.g., when it comes to the demand for life insurance) than Protestants (Halek and Eisenhauer, 2001). Several studies point also to the importance of religion for in developing a sense of trust and community. For instance, Guiso et al. (2003) report that the Catholic and Protestant religions have a positive effect on trust, whereas the Muslim, Buddhist, and Hindu religions have non influence on citizens' levels of trust. Given the above differences, we expect that different religious affiliations will exert a different impact on crowdfunding investment propensity. Therefore, we posit:

Hypothesis 2: Different religious affiliations have a different influence on individuals' crowdfunding investment propensity

Religious affiliations and typology of crowdfunding projects

Many studies have documented that religious people are somehow risk-averse. For instance, Hoffman

(1995) find a negative correlation between church attendance and self-reported attitudes toward risk and danger. More recent study found that risk-averse individuals attend church more often than risk-seeking individuals (Osoba, 2003) and that religious people living in Las Vegas gamble less (Diaz, 2000).

Additionally, religion is mostly related to the maintenance of traditions and rituals; It encourage conservative decision-making (Jiang et al. 2015). Hilary and Hui (2008) suggest that this is indeed the case. They found that firms located in US counties with high levels of religiosity tend to exhibit lower risk exposure as measured by the variances in returns on assets (ROA) or in equity returns.

Therefore, we posit:

Hypothesis 3a: In Start-up/technology-oriented projects, religious beliefs have a negative effect on individuals' crowdfunding investment propensity

On the other hand, altruism is a key value taught by many religions. A sense of selflessness and duty towards the poor is central to all major religions (Fehr and Fischbacher 2003). In essence it urges religious people to engage in social activities such as volunteering on behalf of others in need (Batson et al. 1993; Cnaan et al. 1993; Ellison 1992). Religious involvement may change the nature or priority of people's motives (Weiss Ozorak 2003). There has been some tendency to relate the spirit of altruism to particular religious' traditions, most commonly the Judeo-Christian tradition rooted in the Old Testament commandment to "treat your neighbor as yourself" (Leviticus, Chapter 18) (in Salamon and Sokolowski 2009).

Moreover, altruism has proven to increase individuals' participation in important crowdsourcing phenomena (von Krogh et al. 2012; Franzoni and Sauermann 2014). In reward-based crowdfunding, studies have shown that backers have both consumption and altruistic motivation to support entrepreneurial initiatives (Gerber and Hui 2013; Qiu 2013; Zhang 2012).

Therefore, we posit:

Hypothesis 3b: In Humanitarian/Social-Oriented projects, religious beliefs have a positive effect on the individuals' crowdfunding investment propensity

Data and Method

We analyze crowdfunding investment in early-stage companies in Switzerland. We focus on Switzerland due to its unique characteristic of coexistence of religions. According to the 2015 census, the two biggest religious groups are Catholics - 37.25% of the population, and Protestants - 24.93% of the population with 23.94% of the population atheists. Cantons with the highest percentage of atheists report higher percentages of per capita invested amounts in crowdfunding projects than other Cantons. Figure 1 shows the geographical distribution of religious affiliations in the Swiss confederation in 2000.

[Insert Figure 1 Here]

The sample of proponents and individuals we use in this paper is drawn from diverse platforms, a rarity in crowdfunding studies, which usually draw their data from a single platform. We selected 65 crowdfunding projects from two reward-based Swiss crowdfunding platforms - I care for you (www.icareforyou.ch) which was founded in 2015 in Zurich to finance mainly humanitarian and social projects, and Wemakeit (wemakeit.com) - a reward-based platform founded in 2012 in Zurich. We collected data from individual investors who financed both technology and start-up projects as well as humanitarian and social projects, as categorized by the platforms. Our dataset contains 4,544 observations.

The main sources of data were the crowdfunding platforms' websites and the Swiss Federal Statistical Office (census 2015, www.bfs.admin.ch), plus other official statistical databases such as USTAT - statistics office of the canton Ticino. Data were gathered at the canton-level; (cantons are the NUTS3 level of aggregation). These geographical and historical entities do not correspond to administrative units.

Our main dependent variable is *Crowdfunding investment propensity* which measures crowdfunding investment propensity as a dummy variable that takes the value 1 if an investor has supported more than one crowdfunding project and 0 otherwise. Our main independent variables are *Religiosity*: calculated as 1 for the percentage of people in each canton reporting no religious affiliation; and *Religious affiliations*, i.e. Protestant, Catholic, Jew, Muslim, and Other, representing the percentage of the population declaring belonging to one of these affiliations.

We include control variables that might influence the crowdfunding investment propensity. At the canton level we included controls for the amount of *Income per capita* (in CHF) in 2013, amount of *Cultural expenses* (in CHF) in 2014, and *Immigration*, for percentage of immigrants (no Swiss background) in 2011.We control also for crowdfunding campaign characteristics, such as *Overfunding*, indicating whether the campaign raised more than the funding target amount, calculated as funding target amount minus amount raised, *Number of investors,* indicating the numbers of individuals who supported financially the project, *Geographical proximity*, a dummy variable taking value 1 if the investor was located in the same canton of the project's proponent, 0 otherwise, and *Sector* (start-up/technology vs humanitarian/social) indicated on the crowdfunding campaign website.

Findings

For our empirical analysis we employ a logit model using the amount of individual investment through crowdfunding (Greene, 2003). This model uses all the available information from the explanatory variables including those with zero values for the dependent variable. The pair-wise correlations among our variables are presented in table 1.

[Insert Table 1 here]

To control for multicollinearity, we computed the variance inflation factor (VIF) and tolerance values. The average VIF score for the final model was 3.05. Two individual items representing our

control variables scored higher than 4 while our main variables of interest scored less than 4 which suggests multicollinearity is not an issue (Hair et al., 2006). Table 2 reports the logit model and the model fit statistics.

[Insert Table 2 here]

Model I in table 2 reports the effect of the control variables including *Income per capita*, *Cultural expenses*, *Immigration*, *Overfunding*, *Number of investors*, *Geographical proximity*, and *Sector* on the dependent variable *Crowdfunding investment propensity*. We observe that the level of income per capita and the expenses dedicated by each canton to promote cultural activities are positively associated to crowdfunding investment propensity.

In model II we introduce *Religiosity*. We expect *Religiosity* to be negatively associated to crowdfunding investment (H1). In line to our expectations, we found a significant a negative association between religiosity and individuals' propensity to invest in crowdfunding projects *(p = 0.08, β = - 0.952)*.

Next, we introduced the different religious affiliations to test our second hypothesis (H2). The results in Model III show that Protestant, Catholic, and Muslim religions are negatively associated to individuals' investments via crowdfunding.

To test the robustness of our results we split the sample to allow separate consideration of the two sectors startup and technology-oriented projects, and humanitarian and social-oriented projects. Table 3 reports the logit model and the model fit statistics.

[Insert Table 3 here]

Religious affiliations have different impact on the propensity to invest in crowdfunding projects depending on the type of investment – i.e. technology-oriented vs humanitarian.

In line with our conjecture (H3a), we found that religions affiliations such as Protestant *(p = 0.004, β = - 2.230)*, Catholic *(p = 0.000, β = - 2.412)*, and Muslim *(p = 0.000, β = - 13.75)*, are negatively

associated to crowdfunding investment in projects classified as start-up and technology oriented. However, we find opposite results considering humanitarian oriented crowdfunding project. Supporting our prediction (H3b), all the religious affiliations considered have a positive influence on propensity to finance crowdfunding projects aimed at solving or alleviating a social cause, therefore, having a positive influence on society

An interesting result is the negative impact of *Geographical distance (*p = 0.103, β = -0.2974*)* on individual propensity to support humanitarian and social-oriented crowdfunding projects as well as . technology-oriented projects (*p* = 0.000, β = -0.3853) (Table 3).

Discussion and Conclusion

The purpose of this study was to investigate the influence of salient characteristics of the geographical area in which entrepreneurs reside – community religiosity and religious affiliations– affect the success of the crowdfunding projects they propose. We found that there is a negative association between community religiosity and propensity to finance reward-based crowdfunding projects. This result is in line with previous empirical studies (Bénabou, Ticchi, and Vindigni, 2015) indicating that religiosity is often associated to less favorable views of innovation.

We have also considered the impact of different religious affiliations on the crowd financing propensity of different type of crowdfunding projects. We found that, the negative association with religious beliefs holds in the case of investment in startups or technology-oriented crowdfunding projects but that this relationship turns positive when considering financing humanitarian and social-oriented crowdfunding projects. Specifically, we found that Protestant, Catholic, Jewish, and Muslim religious affiliations have a positive impact on the propensity to support social causes financially. Interestingly, our study also shows that different religion affiliations do not hold different results.
We suggest that this could be due to the importance of religion in developing a sense of community (Putnam and Campbell, 2012) and trust (Guiso et al., 2003) which might induce individuals to subordinate their desires to the benefit of the collective good (Cohen and Hill, 2007).

A sense of community and trust are fundamental ingredients for the success of crowdfunding initiatives (Butticè, Colombo, Wright, 2017): projects that seek funding through these innovative avenues usually are at a very early stage, hence they require trust on the ability of the proponent to develop a new product or service. Additionally, the relationship between the projects' proponents and the potential funders is mediated by the platform with the result that the possibility to assess the accuracy of the information provided to demonstrate the quality of the projects is scarce as also is information on the use of the funding raised. We find that religious beliefs can constitute a fertile cultural *milieu* for the financing of humanitarian and social orientated crowdfunding projects but can be an inhibitor of the financing of technology oriented projects. This result is based on the effects of religious affiliations on economic activities suggested by Guiso et al. (2003).

Our results are robust to controlling for individual-level socio-economic characteristics (income per capita), cantonal characteristics (cultural expenses, immigration), sectoral composition, and project characteristics (overfunding).

We argue that our research provides a set of theoretical contributions and some implications for practice. First, it contributes to refine our understanding of characteristics of geographical contexts required to help crowdfunding flourish, providing evidence of an association between community religiosity and crowdfunding investments. Second, our study also adds an important explanation of cultural value diversity in early-stage investment. New ventures tend to suffer from scarcity of resources, and resource commitment is a key step in the entrepreneurial process (Shane, 2008). Therefore, it is especially important to identify the main factors that encourage and hamper investment in early-stage companies. Securing capital is one of the most important factors for entrepreneurial success, particularly in the early stages of venture development (Florin et al., 2003). A recent report (Wardrop et al., 2015) highlights how different development of the market for early stage investment at the national level in Europe is affected by cultural, financial, and regulatory factors. Our research responds to the European Community call highlighting the need to consider the culture of a given geographical area to obtain a more comprehensive understanding of

entrepreneurship (see the Entrepreneurship 2020 Action Plan, European Commission, 2013). Therefore, our study responds to calls for research on the role of community religiosity on new venture financing. Third, we add to the emergent literature on intra-country cultural value diversity (Dheer, Lenartowicz, and Peterson, 2015) which explores the effect of a driver of firm expansion and performance. Guiso et al. (2003) contend that the extant literature is based on cross-country studies, and that this impact of religious beliefs is confounded by profound differences related to other institutional factors. There is a growing consensus about the need to understand how intra-country cultural value diversity affects economic activities but the contributions so far have been limited by data availability. Thus, Switzerland which includes the co-existence of different religious affiliations, represents a unique empirical setting.

At the same time, this study has some limitations. First, we focus on a single country; our analyses should be repeated on a sample of different countries. Second, we focus on religion as a crucial element of intra-country cultural value diversity that explains individuals' propensity to invest via crowdfunding; other variables could be considered in future analysis. For instance, Switzerland presents intra-country variation in spoken languages. Language is a principal means of transmitting knowledge, and the primary means allowing access to others' thinking and beliefs, and is likely to affect crowdfunding investment propensity. Third, although we consider and control for the geographical distance between investors and project proponent, we were not able to assess whether each individual investor was religious. Additionally, we did not assess whether those seeking funding are religious. Future work could investigate whether this would affect the relationship between religious beliefs and crowdfunding investment. Last, we did not find differences between different religious denominations. This could be influenced by the fact that the majority of the population in Switzerland belongs to the two main religious affiliations, namely Catholics and Protestant. Future research could replicate our study in contexts where all religious denominations are well represented.

Despite its limitations, this paper has interesting implications for proponents of reward-based entrepreneurial projects, managers of crowdfunding platforms, and policymakers. First,

understanding the cultural value determinants of individual propensity to invest in early-stage companies via crowdfunding can provide insights useful for the development of policy focused on promoting entrepreneurship. Second, by emphasizing the importance of religious beliefs and religious affiliations for influencing investing behavior via crowdfunding, our study should help entrepreneurs and managers of crowdfunding platform in deciding in which country to launch the campaign and platform respectively.

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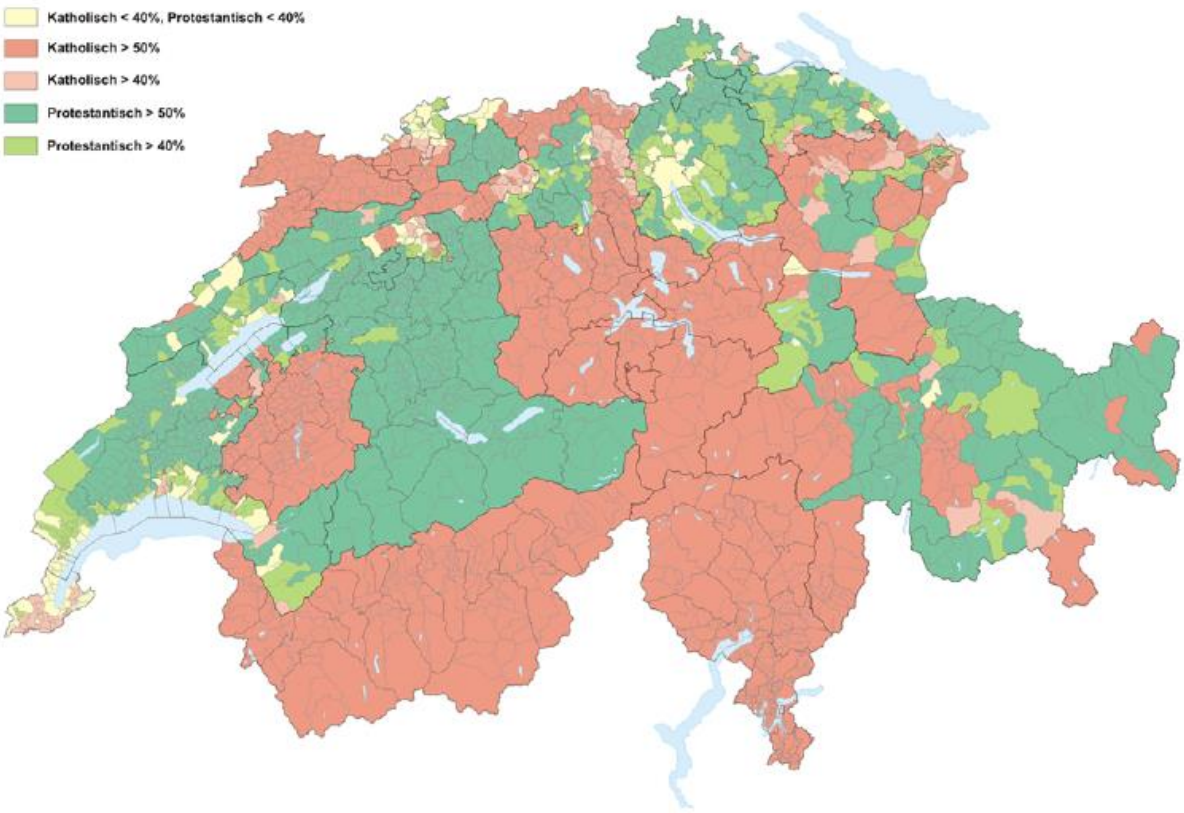
Tables and Figures

Figure 1: Geographical Distribution of Religious Affiliations in the Swiss Confederation in 2000



Source: Swiss Federal Statistical Office.

Table 1: Pair-wise correlations

	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*
(1) Crowdfunding investment propensity								
(2) Religiosity	-0.1289							
(3) Income per capita	0.1180	-0.7667						
(4) Cultural expenses	0.1076	-0.4180	0.6602					
(5) Immigration	0.1206	-0.7954	0.7692	0.5639				
(6) Overfunding	-0.0298	0.0333	-0.1599	-0.1846	-0.1210			
(6) N. Investors	0.1306	-0.1502	0.2749	0.2732	0.2034	-0.8315		
(7) Geographic distance	-0.0197	-0.1220	0.1232	0.2898	0.0962	-0.0181	0.1201	
(8) Sector	-0.2897	0.2225	-0.1544	-0.1040	-0.2330	0.3364	-0.4199	-0.1635

Table 2: Effect of religious beliefs on crowdfunding investment propensity

DV:Crowdfunding investment propensity	*Model I*		*Model II*		*Model III*	
	Coef.	P-value	Coef.	P-value	Coef.	P-value
Religiosity			**-.9528**	**0.086**		
Protestant					**-2.126**	**0.004**
Catholic					**-2.312**	**0.000**
Jew					-2.494	0.805
Muslim					**-12.37**	**0.000**
Income per capita	.0772	0.595	-.1048	0.548	.0317	0.855
Cultural expenses	.1756	0.000	.2114	0.000	.2186	0.000
Immigration	-.2631	0.478	-.6567	0.135	-.5821	0.315
Overfunding	.0000	0.000	.0000	0.000	.0000	0.000
N. Investors	.0015	0.000	.0016	0.000	.0016	0.000
Geographic distance	-.3522	0.000	-.3631	0.000	-.3733	0.000
Sector	-.6807	0.000	-.6769	0.000	-.6828	0.000
Constant	-1.380	0.307	1.063	0.581	.8052	0.665
Observations	3290		3919		3811	
Pseudo R2	0.106		0.107		0.199	

Notes: DV, dependent variable.

Table 3: The effect of religious affiliations on crowdfunding investment propensity in different sectors

DV:Crowdfunding investment propensity	*Start-up/ Technology*		*Humanitarian/ Social Oriented*	
	Coef.	P-value	Coef.	P-value
Protestant	**-2.230**	**0.004**	**28.53**	**0.002**
Catholic	**-2.412**	**0.000**	**28.27**	**0.002**
Jew	-1.437	0.891	**282.8**	**0.026**
Muslim	**-13.09**	**0.000**	**120.5**	**0.005**
Income per capita	.0898	0.633	-.1240	0.941
Cultural expenses	.2116	0.001	1.271	0.002
Immigration	-.5451	0.363	-.6463	0.934
Overfunding	.0000	0.000	.0002	0.085
N. Investors	.0017	0.000	-.0000	0.987
Geographic distance	-.3853	0.000	-.2974	0.103
Constant	-1.039	0.604	-40.38	0.052
Observations	3112		699	
Pseudo R2	0.03		0.09	

Notes: DV, dependent variable.

Public Market Players in the Private World: Implications for the Going Public Process*

Shiyang Huang† Yifei Mao ‡ Cong Wang § Dexin Zhou ¶

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Abstract

Recent years have seen a dramatic increase of investment from public market institutions (e.g. mutual funds, hedge funds) in the private market. We propose a novel demand-side explanation for this phenomenon: Since institutions are able to substitute for underwriters by supporting stock prices in the secondary market, startups rely less on these underwriters, leading to less severe IPO underpricing. We find that: (1) Institutions' participation in startups reduces IPO underpricing; and (2) There is a substitution effect between institutions and all-star analysts on IPO underpricing. To establish causality, we use mutual fund scandal as exogenous shocks to mutual fund investment. We further use the 2003 mutual fund scandal as an exogenous shock to establish the causality.

Keywords: IPO Underpricing, Venture Capital, Institutions
JEL Classification: G23; G24; L13.

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†The University of Hong Kong, E-mail: huangsy@hku.hk.
‡Cornell University. E-mail: ym355@cornell.edu.
§Emory University. E-mail: cong.wang@emory.edu.
¶Baruch College. E-mail: dexin.zhou@baruch.cuny.edu.

1 Introduction

Recent years have seen a dramatic rise of public market players in the private world. Startups that used to be financed primarily by venture capitals (VCs) increasingly are receiving capital from public market institutional investors, such as mutual funds and hedge funds (henchforth "institutions").[1] This phenomenon is puzzling on both the supply and the demand side. On the supply side, given that liquidating shares is difficult in primary markets, investing in startups is not compatible with institutions' liquidity requirement. This is particularly true at the present moment since startups stay private longer (Doidge, Karolyi, and Stulz, 2013, 2017; Gao, Ritter, and Zhu, 2013). On the demand side, given that the amount of private money from VC and private equity (PE) funds has increased dramatically recently (Ewens and Farre-Mensa, 2017), startups do not necessarily demand financing from institutions, which, unlike traditional VCs, do not specialize in nurturing startups.

There are potential explanations on the supply side. First, it may be easier for institutions to find counter-parties (e.g. private capital) when liquidating shares in the primary markets these days. Indeed, the amount of private capital in startups has increased significantly due to regulatory changes (e.g., National Securities Markets Improvement Act of 1996) and technological improvements (Ewens and Farre-Mensa, 2017). Second, the prospect of high returns or diversification benefits in their primary markets could also be potential motivations for institutions.[2] However, the supply side alone does not justify the increase in institutions' involvement in startups. If startups do not demand institutions, the financing from institutions does not necessarily increase even if institutions are willing to invest in startups. Startups with abundant funding would only seek institutions' funding if institutions could benefit them on dimensions other than capital. However, the literature provides no answer on how institutions help startups grow. In fact, Chernenko, Lerner, and Zeng (2017) provide evidence that mutual funds appear

[1] Large mutual funds, such as Fidelity, T. Rowe Price and Blackrock, are increasingly showing a keen interest in young tech private firms (*Mutual funds are bypassing IPOs and going straight for the main course*, QUARTZ, April 2014). For example, while venture capitalists poured 11.3 billion US dollars into startups in the first quarter of 2015, up only 11% from a year ago, the non-traditional funds, including hedge funds and mutual funds, invested 6.4 billion US dollars, a 167% increase from the pervious year(*Hedge Fund Money Going to Venture-Backed Startups Is Skyrocketing*, Yahoo Finance April 2015).

[2] There is no direct evidence yet. Given increased competition from private capital, whether the primary markets actually have high returns is an open question. Even if the primary market does provide a high return, whether this return is still high after adjusting for liquidity risk is not clear.

to be less involved in terms of corporate governance of the startups as opposed to traditional VCs.

Our paper attempts to fill the gap in the literature by providing a novel demand-side explanation. The question we want to address is: Why do startups seek financing from institutions? The answer to this question ultimately comes down to the unique features of institutions and how these unique features help startups. One clear competitive advantage of institutions is that they specialize in the public market. This specialization could benefit startups in various ways. First, institutions would play an important role in supporting secondary market prices after startups go public. Furthermore, this expected price support could even benefit startups at a pivotal point between the public status and the private status — the initial public offering (IPO).

How could institutions' participation support the post-IPO prices of startups? First, institutions play an important role in price discovery (Jiambalvo, Rajgopal, and Venkatachalam, 2002; Nagel, 2005; Boehmer and Kelley, 2009). Second, since institutional investors exhibit herding behavior (Wermers, 1999; Sias, 2004), early institutional participation in pre-IPO startups may induce further institutions' participation after the IPO. The higher level of institutional trading may in turn improve the firm's liquidity (Rubin, 2007; Blume and Keim, 2012) and the stock's resiliency to liquidity shocks (Anand, Irvine, Puckett, and Venkataraman, 2013). Third, since the media increasingly tends to report public market institutions' participation in startups (Liu and Ritter, 2011), institutions' participation could potentially increase the publicity of startups and alleviate potential informational friction in stock pricing (Fang and Peress, 2009).

We argue that institutions' post-IPO market support will benefit startups during the IPO process. Specifically, we focus on how institutions help startups' IPO process by reducing underpricing. The IPO is one of most important steps for startups. During the IPO process, firms going public generally leave a large amount of money on the table, which is defined as the first-day underpricing. Loughran and Ritter (2002) find that, from 1990 to 1998, firms going public in the U.S. left more than $27 billion on the table, an amount that is twice as large as the $13 billion in investment banker fees.[3]

To understand how institutions' investment affects IPO underpricing, we start from the

[3]As a comparison, these firms generated about $8 billion of profits in the year before going public.

analyst lust theory proposed in Liu and Ritter (2011). The theory argues that some early investors in startups, especially VCs, are particularly concerned with post-IPO stock prices since they are generally restricted from liquidating their shares until several months after the IPO. Since influential analysts (i.e. all-star analysts) could attract large institutional investors that support stock prices in the post-IPO markets, VC-backed startups lust for underwriters bundled with coverage from these analysts. These startups reward underwriters with significant IPO underpricing. When these analysts' public market clients (i.e. hedge funds and mutual funds) cross the border to participate directly in pre-IPO startups and potentially stay longer to support the post-IPO markets, the importance of bundling with influential analysts becomes weakened and IPO underpricing becomes less severe.

In line with this argument, we have two key predictions. First, there is less IPO underpricing for startups with institutions' participation. Second, there is a substitution effect between institutions and all-star analysts in IPO underpricing. IPO underpricing with institutions' participation is less sensitive to all-star analysts than those without institutions' participation.[4]

To test our hypothesis, we focus on the VC-backed startups that eventually go public. In the baseline analysis, we examine how institutions' direct pre-IPO participation in the startups is associated with IPO underpricing. Consistent with our first prediction, we find that institutions' pre-IPO participation reduces IPO underpricing. The economic magnitude is sizable: a one standard deviation increase in the proportion of institutional investment in startups reduces their IPO underpricing by 1.7%, which accounts for 6.8% of the mean IPO underpricing.[5] To strengthen our argument that the IPO underpricing reduction effect is due to the role of these institutions in the public market, we use the participation of institutional Limited Partners (LPs)

[4]Our predictions are consistent with some anecdotal evidence. For example, a Wall Street Journal article of February 2nd, 2017, *More Mutual Funds Are Pumping Money into Small Firms*, lists various benefits for startups funded by institutions, including "...**IPO prep**. The advice is not just there when there is a misstep. Perhaps most important, the advice and coaching can help companies with their debut on the stock market, aka the IPO...Mr. Kalra says he and his team try to prepare company managers for what to expect when their stock is listed. They hold mock earnings conference calls, and mock roadshows where company leaders will talk with investors...**Longer-term capital.** Venture-capital investors are typically involved for only a small part of a company's life cycle. 'As soon as the company goes public the VC exits,' meaning they sell their stake, says Mr. Kalra. 'Whereas when the company goes public we'll probably invest more capital.' In other words, the relationship continues beyond the IPO."

[5]In untabulated results, we use an institution-back dummy and find that institutions' pre-IPO participation reduces IPO underpricing by 3.2%. This magnitude is comparable to the underpricing effect generated by top-tier underwriters or underwriters with all-star analysts. For example, Liu and Ritter (2011) find that issue firms using top-tier underwriters are subject to 2.4% more IPO underpricing and those using a bookrunner that bundles underwriting with influential analyst coverage are subject to 9% more underpricing.

as a placebo test. Different from General Partners (GPs), LPs only provide funding without any direct activities in startups. Therefore, institutions' participation in the VC deals as LPs does not necessarily mitigate IPO underpricing. In the placebo test, we associate IPO underpricing with institutions' indirect participation as LPs. As hypothesized, we find no significant correlation between the two variables.

To further pin down how institutions help startups on the public market during the IPO process, we carry out cross-sectional tests. First, we consider the uncertainty associated with startups. When the uncertainty of a startup is high, the demand of post-IPO shares will be low and institutions' participation will become more important to support the post-IPO prices. As a result, institutions play a relatively more important role in the IPO underpricing for startups with higher uncertainties. Consistent with our conjecture, we find that institutions' participation predicts greater IPO underpricing reduction when there is higher analyst forecast error or return volatility for public firms in the industry of the startup.

Second, we examine how the association between the institutions' participation and IPO underpricing varies with the institutions' characteristics. Institutions would be more likely to support post-IPO market prices when these institutions have better prior performance, or are more active in the public market.[6] We find greater IPO underpricing reduction when institutions have higher prior DGTW returns, or for active investors (i.e., dedicated and transient investors according to Bushee and Noe (2000)).

Third, we provide evidence for our second prediction: institutions can substitute for all-star analyst coverage, which in turn reduces IPO underpricing. In the analyst lust theory (Liu and Ritter, 2011), because all-star analyst coverage could support post-IPO stock prices via improving publicity and attracting institutional investors, VC-backed startups reward underwriters with all-star analysts with greater IPO underpricing. When institutions (i.e. all-star analysts' target clients in public markets) participate directly in primary markets, the role of all-star analysts in attracting institutional investors following in post-IPO markets becomes weakened. Therefore, we should observe a weaker relationship between IPO underpricing and all-star analyst coverage when institutions participate in a pre-IPO startup. Furthermore, because VCs generally liquidate their original shares several months after an IPO (i.e. due to lock-up period),

[6]For example, Jame (2017) documents superior peformance of liquidity-supplying hedge funds.

the effect of all-star analysts is only mitigated by institutions with long investment horizons. Thus, we expect that there is only a substitution effect between all-star analysts and dedicated institutions, not transient investors or indexers. Our findings are consistent with this prediction.[7]

These cross-sectional tests further lend credence to our hypothesis concerning institutions' post-IPO market support effect. While it is possible that some omitted variables drive the documented results, it is unlikely to that the omitted variables would bias our results equally along the disparate dimensions of the uncertainties, institutions' prior performance, the activity level, and all-star analyst coverage. The differential prediction of institutions' participation on IPO underpricing reduction along these dimensions indicates that our results are unlikely to be entirely driven by endogenous matching between institutions and startups. Instead, it appears to suggest that institutions' post-IPO market support effect is at least partially in play.

We further use exogenous shocks of fund flow to pin down the causal impact of institutions' participation on IPO underpricing. Specifically, we use the 2003 mutual fund scandal as an exogenous shock to mutual funds' participation in the pre-IPO VC deals. Given that the mutual fund scandal negatively impacted fund flows (McCabe, 2009; Anton and Polk, 2014; Koch, Ruenzi, and Starks, 2016) but had no bearing on startup characteristics, we hypothesize that the scandal reduces the propensity of mutual funds to invest in startups, and affects IPO underpricing only through mutual fund investment. Consistent with our conjecture, we find that the mutual fund scandal significantly reduces the likelihood of mutual funds' investment in startups. Furthermore, the mutual fund investment predicted by the mutual fund scandal leads to with lower IPO underpricing.

A natural question that follows from the above results is: What do institutions gain by helping startups during the IPO process? We argue that startups that desire secondary market support are the ones that are more likely to successfully go public, and they entice institutions' investments with a promise of share liquidation in the near future. Consistent with our conjecture, we find that institutions tend to participate in late-stage deals, and their investments are indeed associated with higher likelihoods of successful exits via IPO. Our view is consistent with the anecdotal evidence that indicates late-stage startups seems to welcome and even seek

[7]Consistent with Liu and Ritter (2011), we find that the institutions participation has no any effects on IPO underpricing for non-VC deals.

funding from institutions as they prepare to enter the IPO process.[8]

There are several other potential demand-side explanations. First, since startups are staying private longer, they do not have access to capital from the public equity market and may require capital from other sources for further development. However, as shown in Figure 10 of Ewens and Farre-Mensa (2017), there are simultaneous increases in the capital from capital, PE funds, corporate venture capital and institutions. More importantly, institutions are usually not the major contributor of the capital for startups. Therefore, the pure capital demand does not seem to be a key factor in startups' desire for institutions' financing. Second, institutions may be actively involved in the corporate governance or daily activities within startups. While this explanation is plausible, there is little supporting evidence so far. As shown by Chernenko, Lerner, and Zeng (2017), institutions tend to have weaker cash flows rights, are less involved in terms of corporate governance, and are under-represented on boards of directors in startups. While we do not intend to completely rule out the aforementioned two explanations, we attempt to show that the secondary market price support and its effect on IPO underpricing is a non-negligible factor that drives institutional investment in startups.

Our paper mainly contributes to two strands of literature. First, we shed light on the nascent literature on institutions' investment in private startups. Ewens and Farre-Mensa (2017) show that the increase in the supply of private capital, especially from VC and PE funds, enables startups to stay private longer with sufficient late-stage financing, which is a rational choice for the startup founders/mangers. Kwon, Lowry, and Qian (2017) also argue that mutual fund investments allow startups to stay private longer. Chernenko, Lerner, and Zeng (2017) document mutual funds' roles on startups in corporate governance provisions. Our paper complements the existing studies, by providing a novel demand-side explanation for institutions' investment in startups, arguing that institutions provide secondary market price support and could reduce IPO underpricing for startups.

Second, we contribute to the literature on IPO underpricing. Most of the studies in this literature focus on the interactions between underwrites and investors, or on the interactions between underwriters and issuer firms. One strand of studies argues that underwriters need to

[8]For example, according to "Mutual Funds Moonlight as Venture Capitalists" in WSJ on April 20, 2014, the founders of several late-stage startups welcomed the mutual funds' investments as mutual funds bring in-depth financial knowledge, which benefits the startups in many ways.

underprice shares in order to induce investors to participate in IPOs (Rock, 1986; Benveniste and Spindt, 1989; Welch, 1992). The other strand of studies argue that underwriters want to underprice IPOs excessively, but issuers want to minimize underpricing (Baron, 1982; Loughran and Ritter, 2002, 2004; Ljungqvist and Wilhelm, 2003). Liu and Ritter (2011) theoretically argue that underwriters' non-price dimensions of underwriting could generate excessive underpricing even with severe competition in underwriting industry. Our argument builds upon Liu and Ritter (2011), and we argue that institutions serve as a substitute for the secondary market services of the underwrites, which could reduce IPO underpricing.

This paper proceeds as follows. Section 2 discusses data and sample construction. Section 3 demonstrates empirical results. Section 4 concludes.

2 Data and Summary Statistics

2.1 IPO Data

We compile our data from several sources. First, we obtain our IPO-related variables from SDC Global New Issues Databases. We consider US IPOs from 1980 to 2016 and we exclude closed-end funds/trusts, depositary issues, dual class IPOs (Loughran and Ritter, 2004), and unit IPOs. We also restrict our attention to common shares, ordinary shares, and class A common shares issuance. Then, we merge our IPO list with VentureXpert to identify VC-backed IPOs. Following prior studies examining IPO underpricing (Megginson and Weiss, 1991; Hanley and Hoberg, 2010; Liu and Ritter, 2011), we require the IPO offer price to be at least five dollars and have more than three million dollars in total proceeds. We obtain IPO underwriter reputation IPO firm founding dates (Loughran and Ritter, 2004) and IPO All-star analyst coverage (Liu and Ritter, 2011) from Prof. Jay Ritter's website.

2.2 IPO Underpricing

Our primary dependent variable is the level of IPO underpricing, measured by the percentage change from the offer price to the first trading day closing price (*Initial Return*). In the appendix, we also examine the effect of institutional participation on IPO cost. We measure IPO cost using the gross underwriting spread, scaled by the gross proceeds dollar amount of issuance (*Gross Spread*) and the ratio of the net proceeds to the gross proceeds (*Proceed Retention*).

2.3 Institutional Participation

Our primary independent variable is the level of public market institution participation from the VC market. For each IPO startup, we obtain a list of all investors from VentureXpert. We identify the public market institutions by matching investor names from VentureXpert to Thomson Financial Institutional Holdings databases. We cross-reference with the available information from the investor's website and the relevant financial websites, such as Bloomberg, to ensure accuracy. For each startup, we measure public market institution participation as the total dollar amount invested by all institutions, scaled by the total dollar amount invested by all VC investors (*Institution Shares*) and the total number of institutional investors, scaled by the total number of investors (*Institution Numbers*).

2.4 Measure of Successful Exit

When measuring the successfulness of startups, we extend our sample to the entire VentureExpert database. We restrict our observations to U.S. headquartered startups with U.S. based VC firms. Our sample includes startups that receive first round of investment from the beginning of 1980 to the end of 2012. We consider a startup as having a successful exit if it goes public or is acquired during our sample period. One potential issue is that some startups stay "alive" for a long time without any explicit exit outcomes, such as going public, being acquired, or being written-off. However, the companies are operationally not functioning. Following the literature (Gompers and Lerner, 2000; Hochberg, Ljungqvist, and Lu, 2007; Nahata, 2008), we classify such companies as written-offs. Specifically, we mark a company as written-off if the company has been alive for more than four years or if the company has not exited as of July 2016. The exit date of such long-term inactive companies is set to be four years after the date of the first-round investment.

2.5 Control Variables

We follow the IPO literature (Liu and Ritter, 2011) and construct a number of firm characteristics that are related to IPO underpricing. These control variables include a dummy variable indicating that the IPO firm is a technology firms (*Tech Dummy*), a dummy variable indicating when an IPO firm is associated with a top-tier underwriter (*Top-tier Dummy*), the ratio of

retained shares to the total shares offered (*Share Overhang*), the natural log of the firm's age at IPO (*Ln(age)*) and the natural log of gross proceeds in millions of dollars (*Ln(Proceeds)*).[9]

We also control for market condition at the time of the IPO, measured as 30-day Market Return Prior to IPOs (*Prior Market Return*). In addition, we control for *Lead VC reputation*, measured as the dollar amount invested by a given VC for all startups during the previous three years, scaled by the total amount raised by all startups (*Lead VC Reputation*). We define the lead VC as the VC with the earliest investment date, largest investment amount, and highest number of rounds participated with descending order of importance. For example, if two VCs both invest during the first round, the one with the highest dollar investment is the lead VC. Finally, we include IPO year fixed effects and IPO firm industry fixed effects, using Fama French 12 industry classifications.

When examining startup exit probability, we follow the VC literature and construct a number of firm characteristics that affect the likelihood of a successful exit. We complement our primary data source with Compustat and Mergers & Acquisition database from SDC. In addition to Lead VC Reputation, we control for the natural log of company age at first round (*Ln(Startup Age at First Round)*), the natural log of the total number of rounds (*Ln(Number of Rounds)*), the natural log of total number of VCs (*Ln(Number of VCs)*), the natural log of total dollar amount raised by the startup (*Ln(Total Amount Raised)*), and an early-stage dummy that equals one1 if the startup is at the seeding stage at the first round (*Early-stage Dummy*). To capture the market timing effect, we control for the exit market condition, including the natural log of the total number of IPOs (*Ln(Lagged Number of IPOs at Exit*), the natural log of the total number of M&As, (*Ln(Lagged Number of IPOs at Exit)*), and the average Market to Book ratio of the startup's industry (*Industry MB*). All three exit market condition variables are constructed using the data from the quarter prior to the startup's exit date. Finally, we add exit year fixed effects, companies' state fixed effects, and companies' industry fixed effects. We report the detailed variable descriptions in Appendix Table A1, and the summary statistics in Table 1. We standardize all continuous independent variables in our main tables.

[9]Since we only examine VC-backed IPOs, we define a top-tier underwriter as an top-tier underwriter as a nine as oppose to eight or higher as in (Liu and Ritter, 2011).

2.6 Summary Statistics

Panel A of Table 1 reports summary statistics on our IPO sample, which consists of 1,902 VC-backed IPOs from 1980 to 2016. These IPOs are backed by 2,281 non-institutional VC firms and 46 institutional VC firms. Nearly half of our sample are technology firms, 20 percent are covered by an all-star analyst and more than one third of IPO firms are associated with a top-tier underwriter. The average issuing firm goes public at the age of 13 and raises 73 million dollars. Two-hundred and three out of the 1902 IPOs have at least one institutional investor. Of those 203 IPOs, the average IPO firm raise 100 million dollars at the age of 15 (untabulated).

Panel B of Table 1 report summary statistics on our extended IPO sample to include both successful and unsuccessful startups. This sample consists of 19,495 startups, of which 1,079 have at least one institutional investor. Thirteen percent of the total number of 19,495 startups eventually go public, 40 percent are acquired, and the rest are written-off. The average startup has 5.36 unique investors and raises $40,000 in 4.17 rounds. Forty-two percent of startups are at an early stage at the time of the first financing round.

3 Empirical Results

3.1 IPO Underpricing

We first assess whether institutions' investments in startups could benefit the startup in the IPO process. We argue that institutions substitute for underwriters in the secondary markets by providing price support. As a result, startups with institutions' investments are less likely to agree to excessive IPO underpricing. To assess how institutions' participation in pre-IPO VC deals predicts IPO underpricing, we estimate the following model:

$$\textit{Initial Return}_i = \alpha + \beta \textit{Institution Participation}_i + \gamma Z_i + \textit{IPO Year FE} + \textit{Industry FE} + \epsilon_i, \quad (1)$$

where i is the index for the startup. The dependent variable in Eq. (1) is the first-day return of the IPO. Our main variable of interest is *Institution Participation*. We use two proxies to capture institutions' participation: *Institution Shares* and *Institution Numbers*. *Institution Shares* is the proportion of total investment in the startup invested by all institutions. *Institution Numbers* is the proportion of investors in the startup that are institutions. Z_i is a vector of controls

that includes *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Ln (Age)*, and *Ln(Proceeds)*. We also control for IPO Year and Industry fixed effects. We use Fama-French 12 industries for the industry classification.[10] We cluster standard errors by IPO year.

Table 2 reports estimates of various specifications of Eq. (1). Columns (1) and (2) present the baseline results without IPO year fixed effects but with industry fixed effects, using *Institution Shares* and *Institution Numbers* as independent variables, respectively. For both *Institution Shares* and *Institution Numbers*, the coefficient estimates are -0.024 (t-stat=-2.61). Columns (3) and (4) demonstrate results without industry fixed effects but with IPO year fixed effects. For both *Institution Shares* and *Institution Numbers*, the coefficient estimates are -0.017 (t-stat=-2.28 and -2.10). In columns (5) and (6), we include both IPO year fixed effects and industry fixed effects. Including both fixed effects increases R-squared to 28.1%, from an R-squared of 16.5% in columns (1) and (2) and an R-squared of 26.9% in columns (3) and (4). The coefficient of *Institution Shares* is -0.018 (t-stat=-2.39). The economic magnitude is sizable: a one standard deviation increase in *Institution Shares* reduces IPO underpricing by 1.8%, which accounts for 7.2% of the mean IPO underpricing in our sample. The coefficient estimate on *Institution Numbers* is -0.017 (t-stat=-2.25). The economic magnitude is similar: a one standard deviation increase in *Institution Shares* reduces *Initial Return* by 1.7%, which accounts for 6.8% of the mean IPO underpricing in our sample. The results are consistent with our hypothesis that institutions' pre-IPO participation in VC deals reduces startups' IPO underpricing.[11]

3.1.1 Placebo tests

We argue that the reason institutions' investments in startups could reduce IPO underpricing is because of the price support that institutions provide. Thus, we hypothesize that only the direct participation from institutions should effectively reduce IPO underpricing. Empirically, we make use of institutions' participation as LPs as a placebo test. When investing as LPs, institutions do not directly participate in venture deals and therefore are unlikely to be directly

[10] The choice of Fama-French 12 industry is based on our data availability. Given the limited data, as a narrower industry definition decreases the degree of freedom significantly.

[11] We also find that institutions' participation helps reduce other costs in the IPO process, such as gross spreads. Institutions' participation also increases proceeds retention. These results are reported in Table A2 of the appendix.

involved in the IPO process. Thus, if the reduction of IPO underpricing is indeed driven by institutions' involvement via price support in the secondary market, we should expect no significant change in IPO underpricing when institutions only participate as LPs. We use the regression specification of Eq. (1) and measure Institution Participation using the GPs with at least one institution LP investor. Table 3 reports the placebo tests results. Similar to the previous analysis, the dependent variables in our regressions are *Initial Return*. We capture institutions' participation in VC deals as LPs by *LP Institution Shares* and *LP Institution Numbers*. The coefficient estimates are not significantly different from zero, indicating that institutions' *indirect* participation in VC deals as LPs does not reduce IPO underpricing. The results are consistent with our conjecture.

Our second placebo test focuses on a smaller sample where an IPO receives investment from at least one institution, but does *not* have a traditional VC investor. If the reduction in IPO underpricing is primarily driven by VC investors' desire for price support, institutions' pre-IPO participation in non-VC backed IPOs should not be associated with lower underpricing. To test this hypothesis, we exclude VC-backed IPOs from the Global New Issues Databases. We merge the IPO firms with CRSP Mutual Fund Holding data to identify mutual fund pre-IPO participation in non-VC backed IPOs. Our prediction is that mutual fund investment will have little to impact on underpricing without VC investors. We confirm this prediction in Appendix Table A3. We find that there is not a significant relation between IPO underpricing and mutual fund investment and that the coefficient estimate is positive.

3.1.2 Cross-sectional Analyses

Our evidence so far shows a robust negative effect of intuitions' pre-IPO investment on IPO underpricing. In this section, we explore a number of cross-sectional analyses in both market conditions and the characteristics of the institutions to shed further light on the mechanism of our previous finding.

Uncertainties We first examine how uncertainties associated with the startup affect the relationship between institutions' participation and IPO underpricing. If institutions' participation is able to substitute for the price support service provided by underwriters, this service should

be more important when there is higher uncertainty. Thus, we expect the relation between institutions' participation and IPO underpricing to be stronger when there is high uncertainty.

We test this conjecture with the following specification:

$$\begin{aligned} \textit{Initial Return}_i = \alpha + \beta_1 \textit{Institution Participation}_i + \beta_2 \textit{Institution Participation}_i \\ \times \textit{Uncertainty}_i + \beta_3 \textit{Uncertainty}_i + \gamma Z_i + \textit{IPO Year FE} + \textit{Industry FE} + \epsilon_i, \end{aligned} \tag{2}$$

We measure the level of uncertainty using two industry-level variables: |*Forecast error*| and *Industry Volatility*. The |*Forecast error*| variable is the value-weighted average of the absolute forecast error of quarterly earnings (the absolute difference between the most recent consensus forecast and actual earning, scaled by lagged share price), weighted by market capitalization at the beginning of the earnings announcement month. *Industry Volatility* is the 24-month industry return volatility, using the monthly Fama-French 12 industry return obtained from Kenneth French's website. We measure these quantities using industry averages to capture the changing industry-level uncertainty. Uncertainty leads to imprecise earnings estimates. High return volatility also indicates an uncertain environment. Table 4 reports how institutions' participation in pre-IPO venture investment affects IPO underpricing under various market conditions. In columns (1) and (2), we examine the interaction of |*Forecast Error*| and the institutions' participation variables. The interaction terms between |*Forecast Error*| and both proxies for *Institution Participation* show negative signs and their t-statistics are -2.42 and -2.44, respectively. In columns (3) and (4), we investigate how industry return volatility affects the relationship between institutions' participation and IPO underpricing. Similar to the first two regressions, we find negative and significant coefficients in both regressions. In both regressions, the relationship between IPO underpricing and institutions' participation become stronger when *Industry Volatility* is high. These results support our conjecture that institutions' participation becomes more important for startup firms in the IPO process under uncertain conditions.

Institution Characteristics We explore how institution characteristics are associated with the IPO underpricing. Since institutions' secondary market participation is crucial in reducing a startup's IPO underpricing, we hypothesize that institutions with a more successful track-record would be able to reduce IPO underpricing more effectively, as previous literature documents that institutions' liquidity provisions are positively correlated with their performance (Jame, 2017).

We further interact these performance measures with the intensity of institutions' participation, as participation by institutions with high past performances is most likely to reduce IPO underpricing. We modify our specification to the following form:

$$\begin{aligned} \textit{Initial Return}_i = \alpha + \beta_1 \textit{Institution Participation}_i + \beta_2 \textit{Institution Participation}_i \\ \times \textit{PERF}_i + \beta_3 \textit{PERF}_i + \gamma Z_i + \textit{IPO Year FE} + \textit{Industry FE} + \epsilon_i, \end{aligned} \tag{3}$$

where *PERF* represents the institution's past performance, which is measured by either *Excess Return* or *DGTW Return*.

Excess returns or *DGTW returns* are calculated in the following way. We first calculate the quarterly excess (DGTW) returns using average excess returns over the risk-free rate (DGTW return) for all the stocks held by an institution, weighted by the beginning-of-quarter holding value. We then compound the quarterly institution excess return to 8 quarters. Finally, we average all institution investors for a given startup, weighted by institutions' investment amounts. The results are reported in Table 5. In all four regressions, the coefficients of the interaction term ($\textit{Institution Participation}_i \times \textit{PERF}_{i,t}$) are negative and statistically significant. These results support our conjecture that heavy investments from institutions with good past performance leads to reduced IPO underpricing.

Next, we examine how different types of institutions affect IPO underpricing. We rely on the institution classification proposed in Bushee and Noe (2000). According to our hypothesis, active institution participation is crucial in reducing IPO underpricing since active investors provide significant services such as secondary market price support. In contrast, passive institutions that mainly aim to track index performances are less likely to engage in price support in secondary markets. Based on Bushee's classification, we classify transient and dedicated institutions as active institutions since these institutions do not have strong tendencies to track indices, which lends them the flexibility to command secondary market price support for startups. We classify quasi-indexers as passive institutions. We construct our Institution Participation variables separately using institutions from each category. We report our results based on this dichotomy in columns (1) and (2) of Table 6. Consistent with our hypothesis, we find that only *Institution Shares* and *Institution Numbers* in the active institution category have a significant negative relationship with IPO underpricing. While the coefficients are negative for non-active institu-

tions, they are not statistically significant. We further use the three-category defined in Bushee and Noe (2000) to classify institutions. Our results are reported in columns (3) and (4) of Panel A in Table 6. We find that both dedicated and transient investors are significantly associated with reduced IPO underpricing. In contrast, the quasi-indexers' participation has little effect in reducing IPO underpricing.

We also explore if independent investment advisors (IIA) and other institutions have differential impacts on IPO underpricing. Our classification of institutions are based on Thomson Financial Institutional Holding data.[12] These results are reported in Panel B of Table 6. We use both *Institution Shares* and *Institution Numbers* as proxies for IIA institutions' participation (reported in Column (1)) and non-IIA institutions' participation (reported in Column (2)). These results indicate that only IIA involvement reduces IPO underpricing. Overall, the institution classification results indicate that only the pre-IPO investments by active investors are significantly associated with reduced IPO underpricing.

3.1.3 Institutions, Underwriter Service Provision, and IPO Underpricing

Our results so far indicate that active institutions' investments in startups reduce their IPO underpricing. Next, we explore a specific mechanism by which investments from institutions provide substitutive services to startups. Liu and Ritter (2011) document that issuing firms are willing to accept additional underpricing if underwriters are able to provide coverage by all-star analysts. They argue that since all-star analysts are able to attract broad interests to these newly listed firms and attract large institutions, issuing firms are better able to maintain their secondary market prices if they are covered by all-star analysts. Star analyst coverage is particularly important for startups invested by VC firms since venture capitalists focus on share prices when they distribute the shares to LPs (generally six months to one year after the IPO). Since all firms in our sample have investments from VC firms, we expect that all-star analyst coverage should play an important role in IPO underpricing. The reason that institutions' investments in startup firms are associated with lower IPO underpricing is due to their ability to provide secondary market price support to issuing firm, which could substitute for the service provided by all-star analysts. The empirical implication is that institutions' participation should

[12] We obtain the classification data from Prof. Brian Bushee's website.

reduce the relationship between star analyst coverage and IPO underpricing. In particular, to support the secondary prices, an institution needs to be committed to hold these firms in the long-run. Thus, we should expect our results to be most significant for dedicated investors.

We test our hypotheses using the following specification:

$$\begin{aligned} \textit{Initial Return}_i = \alpha &+ \beta_1 \textit{Institution Participation}_i \\ &+ \beta_2 \textit{Institution Participation}_i \times \textit{Star Analyst}_i \\ &+ \beta_3 \textit{Star Analyst}_i + \gamma Z_i + \textit{IPO Year FE} + \textit{Industry FE} + \epsilon_i. \end{aligned} \tag{4}$$

In this test, we separate institution participation into three classes as defined in Bushee and Noe (2000). We report these results in Table 7. In column (1) and (2), we confirm the analyst lust effect documented in Liu and Ritter (2011) since we document a significant negative relationship between the All-star Dummy and IPO underpricing both with and without additional control variables. Next, we interact *Institution Shares* of dedicated, indexer, and transient institutions. This result is reported in column (3) of Table 7. We find that the interaction between *Dedicated Institution Numbers* and *All-star Dummy* is negative (t-stat=-2.30). A one standard deviation increase in *Dedicated Institution Shares* reduces the *All-star Dummy* by 0.022, or more than 20% of the economic magnitude of the star analyst coverage coefficient. We also use *Institutions Numbers* as proxies for participation from each category of institutions. This result is reported in column (4) of Table 7. We find that the coefficient is -0.021 (t-stat=-2.17). This result is consistent with the analysis using *Institution Shares* as the proxy for participation. In contrast, the interaction between star analyst and transient or quasi-indexer institutions does not have a significant relationship with IPO underpricing. This result suggests that institutions with long horizons are able to reduce startups' reliance on star analyst coverage.

3.1.4 Evidence from the 2003 Mutual Fund Scandal

While we include a comprehensive set of control variables in our prior analyses, including a large number of fixed effects, we do not completely shield our analyses from the endogeneity concern. To address this concern, we utilize the 2003 mutual fund scandal as a shock to the probability of institution participation. Fund families involved in the scandal on average suffered large and long-lasting negative net flows (up to three years, see McCabe (2009)). This setting has been used in prior studies as an exogenous outflow (e.g., Anton and Polk (2014)). Such

negative net flow is likely to decrease the likelihood of a given institution's participation in startup financing rounds, but unlikely to have any effect on the IPO underpricing through other channels.

We first construct a hypothetical sample of potential deals in the spirit of Bottazzi, Da Rin, and Hellmann (2016) and Gompers, Mukharlyamov, and Xuan (2016). For each IPO startup, we construct a set of institutions that could potentially participate in the startup financing rounds. A institution is deemed to be a potential investor if 1) the institution has invested in the private market before the given startup exits and 2) the previous investment is in the same Fama-French 12 industry group as the given startup.

We then identify institutions that are involved in the 2003 scandal by their names.[13] For each fund-startup investment pair, we consider an investment to be affected by the scandal if 1) the fund family is involved in the 2003 scandal, 2) the first financing round is earlier than the 3 year anniversary of the scandal, and 3) the startup has not exited the private market at the time of the scandal.

We carry out our analysis in two stages. In our first stage, we estimate the participation probability using the following equation:

$$Institution\ Dummy_{i,j} = f(\beta Scandal_{i,j} + \gamma Z_i + Institution_i + \epsilon_{i,j}), \tag{5}$$

where $Institution\ Dummy_{i,j}$ is a dummy variable that equals 1 if institution, i invests in startup, j. $Scandal_{i,j}$ is a dummy variable that equals 1 if the potential investment from institution, i to startup, j is affected by the scandal, as defined above. We add the same set of control variables as in Table 2, as well as institution fixed effects. Standard errors are clustered at the institution level.

In our second stage, we follow the same regression specification as in Table 2. However, we replace our previous institution participation variable with predicted values from equation (1). Specifically, we calculate *predicted* institution numbers as follows:

$$\widehat{Institution\ Numbers}_j = \frac{\sum_i \widehat{Institution\ Dummy}_{i,j}}{\sum_i \widehat{Institution\ Dummy}_{i,j} + Number\ of\ Non\text{-}institution\ Investors_j}. \tag{6}$$

[13] Our mutual fund scandal involvement data come from Anton and Polk (2014).

The results are reported in Table 8. We first estimate a regression that includes fixed effects and the scandal dummy. In this regression, we find that the scandal indicator has a significant negative coefficient (t-stat=-4.76), indicating that institutions involved in the 2003 scandal have a significant lower probability in investing in startups. The marginal effect implies an 18 bps lower likelihood for an institution affected by the scandal to invest in the average startup. The average probability of an institution investing in a given startup in these counterfactual pairs is also 0.46%. Thus, involvement in mutual fund scandals reduces the probability of investment by 40 percent.

Next, we conduct second-stage analyses and include the aggregated fitted value from the first-stage regression as an independent variable.[14] The corresponding second-stage regressions are reported in Column (1) of Panel B. The $\widehat{\textit{Institution Numbers}}$ has a significant and negative effect on IPO underpricing. This coefficient estimate of -0.019 (t-stat=-2.82) is also in line with our finding in Table 2.

In addition, we use an alternative specification that includes additional controls in the first-stage specification. The coefficient of the scandal variable remains statistically and economically significant, indicating the robustness of our first-stage estimation. We report the corresponding second-stage estimation in Column (2) of Panel B, and the coefficient estimate is identical to our first specification.

Since the scandal in 2003 specifically affects a subset of institutions, namely mutual funds, we repeat our analyses with only mutual funds as potential investors when creating the institution-startup pairs. These analyses are reported in Columns (3) and (4) of Panels A and B. In Panel A, the coefficient of scandal involvement is similar to our initial specification (a 14 bps decrease in probability of participation). In the second stage, we again aggregate the $\widehat{\textit{Institution Numbers}}$ probability and calculate the predicted *Institution Numbers* in the deal. The corresponding second-stage regressions are reported in Columns (3) and (4) of Panel B. In the second stage regression, we again find negative and significant coefficients for the $\widehat{\textit{Institution Numbers}}$. These coefficients are slightly lower than the first two regressions, but they remain statistically significant.

[14] We rely on the $\widehat{\textit{Institution Numbers}}$, as opposed to $\widehat{\textit{Institution Amount}}$, since it is easier to interpret the coefficient. Our results are consistent if we predict the *Institution Amount* in the first stage and use the aggregated *Institution Amount* in our second-stage regression.

In summary, our previous analyses demonstrate that the relationship between institution participation and IPO underpricing is unlikely to be driven by endogenous matching between unobserved deal characteristics and institution participation. We confirm that institution participation reduces the cost of IPO for startup firms.

3.2 Institutions' Investment and Successful Exit

The negative relation between institutions' participation and IPO underpricing documented in the previous subsection highlights the economic benefit of institutions' investments for startups. However, it is important to note that institutions face many costs and constraints when investing in startups. For example, mutual funds and, to a lesser extent, hedge funds need to hold liquid securities in order to meet the potential redemption from investors. Making illiquid pre-IPO investments in startups limits their ability to meet the liquidity demand. Additionally, most institutions focus on the secondary market and do not specialize in making pre-IPO VC investments. Thus, it is equally important for us understand what entices institutions to make investments in these startups.

One reason may be a decreasing number of newly listed companies in the secondary market that are available for institutions to invest in (e.g., Doidge, Karolyi, and Stulz (2013)), which forces institutions to consider investment opportunities outside of the secondary market. Ewens and Farre-Mensa (2017) also point to reduced regulation and improved technology as potential factors in reducing the constraints for institutions to invest in startups. We argue that, in order to attract institutions' investments, independent VC firms may partner with institutions only on high quality startup firms. Given the evidence that VC firms and institutions tend to build long-term partnerships (e.g., Kwon, Lowry, and Qian (2017)), it becomes even more important for VC firms to offer high quality startup investment opportunities to institutions.

3.2.1 Exit Probability

Since institutions' participation benefits startups during the IPO process, we argue that the positive relationship between institutions' participation and the probability of successful exit should concentrate on the startups that aim for an IPO exit. In contrast, VC firms may be less incentivized to share a good startup investment with institutions if the startup is looking to be

acquired. To test this conjecture, we implement a multinomial logistic regression with the dependent variable indicating the exit outcome. Three outcomes are considered: IPO, M&A, and the third baseline case of failure to exit. The results from this multinomial logistic regression are reported in Table 9. We first use *Institution Shares* as a proxy for institutions' participation. Reported in columns (1) and (2) of Table 9, our results indicate that the participation of institutions significantly increases the probability of exit through IPO. In contrast, these investments are not significantly associated with a higher probability of exit through the M&A channel. To validate these results, we also use *Institution Numbers* as an alternative proxy for institutions' participation. These results are reported in columns (3) and (4) in Table 9. These results are similar to our *Institution Shares* results analyses. We observe a significant positive relationship between *Institution Numbers* and IPO exit, and there is no significant relationship between *Institution Numbers* and M&A exit. This result supports the idea that VC firms are more likely to share high quality venture investment opportunities with institutions if the invested firm is aiming for an IPO exit, as institutions' investments benefit startups and VC firms not only as a capital provider, but also as an effective force in reducing the cost of IPO.

This result is consistent with a number of explanations. First, it is consistent with our hypothesis that VC firms are likely to partner with institutions on high quality deals. Second, it is possible that institutions have superior ability in identifying promising startups. However, given that institutions mainly specialize in the secondary market, this second possibility would require a strong assumption that institutions are superior to independent VC firms in selecting startups.

4 Conclusion

Our paper provides a novel demand-side explanation for a new phenomenon that has attracted significant academic and media attention in recent years: institutions that traditionally focus on the public market are increasingly investing in VC-backed startups. We argue that as institutions directly participate in pre-IPO startups, startups rely less on underwriters with all-star analysts for secondary market support. As a result, startups reward underwriters with less IPO underpricing. Consistent with this argument, we find that: (1) Public market institutions' direct participation in startups reduces IPO underpricing, while their indirect participation as

LP does not; (2) There is a substitution effect between public market institutions and all-star analyst coverage on IPO underpricing. In the cross section, the IPO underpricing reduction is more pronounced under higher industry uncertainty and when institutional investors are more active and have better prior performance. Lastly, we provide evidence that public market institutions' investment are rewarded with higher rate of successful exit.

Our study provides a complement to the nascent literature on institutions' investment in startups by arguing that institutions provide post-IPO market price support to the startups. We also contribute to the IPO underpricing literature by building upon Liu and Ritter (2011) and introducing institutions as a substitute for the secondary market services of the underwriters.

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Table 1: Summary Statistics

This table presents the summary statistic of variables in our analyses. Panel A Reports summary statistics from our IPO sample, used in Table 2 to Table 7. Panel B reporst summary statistics from our all startup sample, used in Table 8 and Table 9. Variable definition are in the Appendix.

Panel A

	Obs	Mean	Std Dev	Quartile 1	Median	Quartile 3
Initial Return	1902	0.25	0.44	0.00	0.10	0.29
Institution Shares	1902	0.02	0.11	0.00	0.00	0.00
Institution Numbers	1902	0.02	0.09	0.00	0.00	0.00
|Forecast Error|	1756	0.00	0.00	0.00	0.00	0.00
Industry Volatility	1893	0.00	0.00	0.00	0.00	0.00
Excess Return	1840	0.04	0.21	0.00	0.00	0.00
DGTW Return	1840	0.01	0.06	0.00	0.00	0.00
IIA Institution Shares	1159	0.01	0.07	0.00	0.00	0.00
Dedicated Institution Shares	1159	0.00	0.02	0.00	0.00	0.00
Indexer Institution Shares	1159	0.00	0.02	0.00	0.00	0.00
Transient Institution Shares	1159	0.00	0.01	0.00	0.00	0.00
IIA Institution Numbers	1159	0.02	0.07	0.00	0.00	0.00
Dedicated Institution Numbers	1159	0.01	0.03	0.00	0.00	0.00
Indexer Institution Numbers	1159	0.00	0.02	0.00	0.00	0.00
Transient Institution Numbers	1159	0.01	0.03	0.00	0.00	0.00
All-star Dummy	1902	0.13	0.33	0.00	0.00	0.00

Panel B

	Obs	Mean	Std Dev	Quartile 1	Median	Quartile 3
IPO Dummy	19495	0.13	0.34	0.00	0.00	0.00
M&A Dummy	19495	0.40	0.49	0.00	0.00	1.00
Institution Shares	19495	0.01	0.10	0.00	0.00	0.00
Institution Numbers	19495	0.02	0.09	0.00	0.00	0.00
Startup Age at First Round	19495	5.74	13.52	0.00	1.00	5.00
Number of Rounds	19495	4.17	3.18	2.00	3.00	6.00
Number of VCs	19495	5.36	4.40	2.00	4.00	7.00
Total Amount Raised	19495	40696	77242	4901	16054	43562
Early-stage Dummy	19495	0.42	0.49	0.00	0.00	1.00
VC Reputation	19495	0.17	0.42	0.00	0.03	0.16
Industry MB	19495	0.43	0.90	0.03	0.10	0.36
Lagged Number of IPOs at Exit	19495	19.24	17.42	9.00	13.00	22.00
Lagged Number of MAs at Exit	19495	1772	423	1565	1746	2051

Table 2: IPO Upderpricing

This table reports the results of how institution participation affect IPO underpricing. We report OLS regression results. The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The key independent variables are *Institution Shares*, which measures the total dollar amount invested by all institutional investors, scaled by the total dollar amount invested by all investors and *Institution Numbers*, which measures the total number of institutional investors, scaled by the total number of VC investors. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO year fixed effects and industry fixed effects. The standard errors are clustered at IPO year level. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1)	(2)	(3)	(4)	(5)	(6)
Institution Shares	-0.024**		-0.017**		-0.018**	
	(0.009)		(0.008)		(0.008)	
Institution Numbers		-0.024**		-0.017**		-0.017**
		(0.009)		(0.008)		(0.008)
Lead VC Reputation	-0.012	-0.013	-0.014	-0.014	-0.011	-0.012
	(0.012)	(0.012)	(0.012)	(0.013)	(0.012)	(0.012)
Tech Dummy	0.090**	0.090**	0.129***	0.129***	0.070*	0.070*
	(0.036)	(0.036)	(0.042)	(0.042)	(0.035)	(0.035)
Top-tier Dummy	0.098**	0.099**	0.035	0.036	0.038	0.039
	(0.043)	(0.043)	(0.026)	(0.026)	(0.027)	(0.027)
Prior Market Return	0.022	0.022	0.022	0.022	0.023*	0.023*
	(0.016)	(0.015)	(0.013)	(0.013)	(0.013)	(0.013)
Share Overhang	-0.048*	-0.048*	-0.010	-0.010	-0.018	-0.018
	(0.027)	(0.027)	(0.019)	(0.019)	(0.020)	(0.020)
Ln (Age)	-0.080***	-0.080***	-0.041***	-0.041***	-0.048***	-0.048***
	(0.022)	(0.022)	(0.011)	(0.011)	(0.011)	(0.011)
Ln (Proceeds)	0.094***	0.094***	0.080**	0.080**	0.085***	0.085***
	(0.028)	(0.028)	(0.030)	(0.030)	(0.031)	(0.031)
Observations	1,902	1,902	1,902	1,902	1,902	1,902
IPO Year Fixed Effects	NO	NO	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	NO	NO	YES	YES
Adjusted R-Square	0.165	0.165	0.269	0.269	0.281	0.281

Table 3: Institutional LP Participation and IPO Underpricing

This table presents the results of how institution participation as limit partners affects IPO underpricing. We report OLS regression results. The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The key independent variables are *LP Institution Shares*, which measures the total dollar amount invested by all institutional investors with at least one institutional LP, scaled by the total dollar amount invested by all investors and *LP Institution Numbers*, which measures the total number of investors with at least one institutional LP, scaled by the total number of investors. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO year fixed effects and industry fixed effects. The standard errors are clustered at IPO year level. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1)	(2)
Institution Shares	0.005	
	(0.013)	
Institution Numbers		0.002
		(0.006)
Lead VC Reputation	-0.012	-0.011
	(0.013)	(0.013)
Tech Dummy	0.069*	0.069*
	(0.035)	(0.035)
Top-tier Dummy	0.038	0.038
	(0.026)	(0.027)
Prior Market Return	0.023*	0.023*
	(0.013)	(0.013)
Share Overhang	-0.018	-0.018
	(0.020)	(0.020)
Ln (Age)	-0.050***	-0.050***
	(0.012)	(0.012)
Ln (Proceeds)	0.082**	0.082**
	(0.030)	(0.030)
Observations	1,902	1,902
Fixed Effects	YES	YES
Adjusted R-Square	0.279	0.279

Table 4: Cross-sectional Analysis: Uncertainty and IPO Underpricing

This table presents the results of how the institution participations effect on IPO underpricing varies across different market sections. We report OLS regression results. Panel A presents how to institution participation effect varies with industry-level analyst |*Forecast error*|, measured as the industry value-weighted average forecast error of quarterly earnings. Panel B presents how the institution participation effect varies with *Industry Volatility*, measured as the 24-month industry return volatility. The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The key independent variables are *Institution Shares*, which measures the total dollar amount invested by all institutional investors, scaled by the total dollar amount invested by all investors and *Institution Numbers*, which measures the total number of institutional investors, scaled by the total number of VC investors. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO year fixed effects and industry fixed effects. The standard errors are clustered at IPO year level. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	Panel A: |Forecast Error|		Panel B: Industry Volatility	
	(1)	(2)	(3)	(4)
Institution Shares X |Forecast Error|	-0.002***			
	(0.001)			
Institution Numbers X |Forecast Error|		-0.003**		
		(0.001)		
Institution Shares X Industry Volatility			-0.008*	
			(0.004)	
Institution Numbers X Industry Volatility				-0.008**
				(0.004)
|Forecast Error|	-0.004	-0.004		
	(0.005)	(0.005)		
Industry Volatility			0.037*	0.035*
			(0.020)	(0.019)
Institution Shares	-0.018**		-0.019**	
	(0.009)		(0.008)	
Institution Numbers		-0.017*		-0.019**
		(0.009)		(0.008)
Observations	1,756	1,756	1,893	1,893
Controls	YES	YES	YES	YES
Fixed Effects	YES	YES	YES	YES
Adjusted/Pseudo R-Square	0.282	0.282	0.283	0.283

Table 5: Cross-sectional Analysis: Institutional Investor Performance and IPO Underpricing

This table presents the results of how the institution participation effect on IPO underpricing varies with public market performance of institutions. We report OLS regression results. Public market performance are measured by *Excess Return*, the excess return is the weighted average of 24-month excess return over risk-free rate of all institution investors and *DGTW Return*, the DGTW return is the weighted average of 24-month DGTW adjusted return of all institution investors. The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The key independent variables are *Institution Shares*, which measures the total dollar amount invested by all institutional investors, scaled by the total dollar amount invested by all investors and *Institution Numbers*, which measures the total number of institutional investors, scaled by the total number of VC investors. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO year fixed effects and industry fixed effects. The standard errors are clustered at IPO year level. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1)	(2)	(3)	(4)
Institution Shares X Excess Return	-0.008**			
	(0.003)			
Institution Numbers X Excess Return		-0.011**		
		(0.005)		
Institution Shares X DGTW Return			-0.006**	
			(0.002)	
Institution Numbers X DGTW Return				-0.007**
				(0.003)
Excess Return	0.017	0.037*		
	(0.011)	(0.019)		
DGTW Return			0.016*	0.026**
			(0.009)	(0.013)
Institution Shares	-0.017*		-0.022**	
	(0.009)		(0.011)	
Institution Numbers		-0.025**		-0.025***
		(0.010)		(0.009)
Observations	1,840	1,840	1,840	1,840
Control Variables	YES	YES	YES	YES
Fixed Effects	YES	YES	YES	YES
Adjusted/Pseudo R-Square	0.284	0.285	0.284	0.284

Table 6: Institutional Investor Classification and IPO Underpricing

This table presents the results of how the institution participation effect on IPO underpricing varies across different classifications of institutional investors. We report OLS regression results. Panel A presents how institution participation effect varies across IIA and non-IIA investors, defined by Spectrum. Panel B presents how institution participation effect varies with institutional investors investment horizon, defined in Bushee and Noe (2000). The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The key independent variables are *Institution Shares*, which measures the total dollar amount invested by all institutional investors, scaled by the total dollar amount invested by all investors and *Institution Numbers*, which measures the total number of institutional investors, scaled by the total number of VC investors. We calculate both *Institution Shares* and *Institution Numbers* separately by institutional investor classification. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO year fixed effects and industry fixed effects. The standard errors are clustered at IPO year level. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Panel A: Investment Horizon

	(1)	(2)	(3)	(4)
Active Institution Shares	-0.016***			
	(0.005)			
Non-Active Institution Shares	-0.010			
	(0.008)			
Active Institution Numbers		-0.015***		
		(0.004)		
Non-Active Institution Numbers		-0.008		
		(0.008)		
Dedicated Institution Shares			-0.009**	
			(0.004)	
Indexer Institution Shares			-0.003	
			(0.006)	
Transient Institution Shares			-0.014***	
			(0.005)	
Dedicated Institution Numbers				-0.009**
				(0.004)
Indexer Institution Numbers				0.001
				(0.005)
Transient Institution Numbers				-0.011**
				(0.004)
Observations	1,902	1,902	1,902	1,902
Control Variables	YES	YES	YES	YES
Fixed Effects	YES	YES	YES	YES
Adjusted/Pseudo R-Square	0.281	0.280	0.280	0.279

Panel B: Investor Type

	(1)	(2)
IIA Institution Shares	-0.020***	
	(0.006)	
Non-IIA Institution Shares	-0.001	
	(0.007)	
IIA Institution Numbers		-0.019***
		(0.006)
Non-IIA Institution Numbers		-0.000
		(0.005)
Observations	1,902	1,902
Control Variables	YES	YES
Fixed Effects	YES	YES
Adjusted/Pseudo R-Square	0.281	0.281

Table 7: Substitution Effect: Institutional Investors and All-star Analysts

This table presents the results of whether institution participation alleviate analyst lust effect of IPO underpricing. We report OLS regression results. *All-star dummy* is a dummy variable that equals one if the IPO is covered by an Institutional Investor all-star analyst (top 3) from the bookrunner within one year of the IPO. The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The key independent variables are *Institution Shares*, which measures the total dollar amount invested by all institutional investors, scaled by the total dollar amount invested by all investors and *Institution Numbers*, which measures the total number of institutional investors, scaled by the total number of VC investors. We calculate both *Institution Shares* and *Institution Numbers* separately by institutional investor classification. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO year fixed effects and industry fixed effects. The standard errors are clustered at IPO year level. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	(1)	(2)	(3)	(4)
All-star Dummy	0.159***	0.103***	0.108***	0.104***
	(0.037)	(0.027)	(0.027)	(0.027)
Dedicated Institution Shares X All-star Dummy			-0.022**	
			(0.010)	
Indexer Institution Shares X All-star Dummy			0.005	
			(0.021)	
Transient Institution Shares X All-star Dummy			0.053	
			(0.045)	
Dedicated Institution Numbers X All-star Dummy				-0.021**
				(0.010)
Indexer Institution Numbers X All-star Dummy				0.006
				(0.026)
Transient Institution Numbers X All-star Dummy				0.036
				(0.040)
Dedicated Institution Shares			-0.006	
			(0.008)	
Indexer Institution Shares			-0.016	
			(0.011)	
Transient Institution Shares			-0.019*	
			(0.009)	
Dedicated Institution Numbers				-0.008
				(0.006)
Indexer Institution Numbers				-0.005
				(0.010)
Transient Institution Numbers				-0.016
				(0.009)
Observations		1,159	1,159	1,159	1,159
Control Variables		No	YES	YES	YES
Fixed Effects		YES	YES	YES	YES
Adjusted/Pseudo R-Square		0.256	0.293	0.293	0.292

Table 8: Two-stage Regression

This table reports the results of the two-stage regressions. Panel A reports the results from first stage logistic regressions. The key independent variable is Scandal, which is a dummy variable that equals one if the potential investment for an institution-startup pair is affected by the scandal. The key dependent variable is Institution Dummy, which is a dummy variable that equals one if an institution-startup pair investment took place. The standard errors are clustered at institution level. Panel B reports the results from second stage regressions. The key independent variable is $\widehat{Institution\ Numbers}$, which is the *predicted Institution Numbers* from the first stage regressions. The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The standard errors are clustered bootstrapped with 1,000 repetitions. Column (1) and (2) use considers all institutions. Column (3) and (4) use considers only mutual funds. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	Panel A: First Stage			
	(1)	(2)	(3)	(4)
Scandal	-0.699***	-0.806***	-0.699***	-0.758***
	(0.147)	(0.244)	(0.149)	(0.293)
Lead VC Reputation		-0.076		-0.512**
		(0.115)		(0.248)
Tech Dummy		0.061		0.346
		(0.232)		(0.237)
Top-tier Dummy		-0.042		-0.360**
		(0.130)		(0.157)
Prior Market Return		-0.052		-0.038
		(0.056)		(0.074)
Share Overhang		0.004		0.133*
		(0.078)		(0.072)
Ln (Age)		0.161*		0.080
		(0.094)		(0.122)
Ln (Proceeds)		0.001		0.044
		(0.139)		(0.115)
Observations	42,599	42,505	20,534	20,485
Fixed Effects	YES	YES	YES	YES
Adjusted/Pseudo R-Square	0.045	0.048	0.056	0.070

Panel B: Second Stage

	(1)	(2)	(3)	(4)
$\widehat{Institution\ Numbers}$	-0.019***	-0.019***	-0.014***	-0.013**
	(0.006)	(0.006)	(0.006)	(0.005)
Lead VC Reputation	-0.011	-0.012	-0.012	-0.013
	(0.012)	(0.011)	(0.012)	(0.012)
Tech Dummy	0.056	0.057	0.057	0.057
	(0.037)	(0.038)	(0.037)	(0.036)
Top-tier Dummy	0.047*	0.047*	0.045*	0.044*
	(0.026)	(0.025)	(0.025)	(0.026)
Prior Market Return	0.025*	0.024*	0.024*	0.024*
	(0.014)	(0.014)	(0.014)	(0.014)
Share Overhang	-0.020**	-0.021**	-0.022**	-0.021**
	(0.009)	(0.009)	(0.009)	(0.009)
Ln (Age)	-0.051***	-0.050***	-0.053***	-0.053***
	(0.010)	(0.010)	(0.010)	(0.010)
Ln (Proceeds)	0.089***	0.089***	0.092***	0.092***
	(0.016)	(0.016)	(0.016)	(0.016)
Observations	1,900	1,900	1,863	1,863
Fixed Effects	YES	YES	YES	YES
Adjusted/Pseudo R-Square	0.287	0.287	0.287	0.287

Table 9: Institutions' Participation and Exit Channel

This table presents the results of how institutions participation affect the channel of exit. The specification for this table is a Multinomial-Logit model. The dependent variable, *Exit Category*, equals one if a company goes public, two if a company is acquired, and three if a company is liquidated. The key independent variables are *Institution Share*, which measures the total dollar amount invested by all institutions, scaled by the total dollar amount invested by all investors and *Institution Numbers*, which measures the total number of institutional investors, scaled by the total number of VC investors. We also include the following control variables: *Ln(Startup Age at First Round)*, *Ln(Number of Rounds)*, *Ln(Number of VCs)*, *Ln(Total Amount Raised)*, *Early-stage Dummy*, *Lead VC Reputation*, *Industry MB*, *Ln(Lagged number of IPO at exit)* and *Ln(Lagged number of MA at exit)*. The definition of the control variables are reported in the appendix Table A1. We also include exit year fixed effects, industry fixed effects, and state fixed effects. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	IPO	M&A	IPO	M&A
	(1)	(2)	(3)	(4)
Institution Shares	0.080***	0.024		
	(0.022)	(0.018)		
Institution Numbers			0.074***	0.019
			(0.022)	(0.018)
Ln(Startup Age at First Round)	0.121***	0.014	0.119***	0.014
	(0.028)	(0.019)	(0.028)	(0.019)
Ln(Number of Rounds)	-0.421***	-0.353***	-0.422***	-0.354***
	(0.037)	(0.024)	(0.037)	(0.024)
Ln(Number of VCs)	0.216***	0.238***	0.217***	0.238***
	(0.040)	(0.027)	(0.040)	(0.027)
Ln(Total Amount Raised)	1.149***	0.289***	1.148***	0.289***
	(0.042)	(0.024)	(0.042)	(0.024)
Early-stage Dummy	-0.169***	-0.081***	-0.168***	-0.081***
	(0.029)	(0.018)	(0.029)	(0.018)
Lead VC Reputation	0.083***	0.099***	0.083***	0.099***
	(0.024)	(0.019)	(0.024)	(0.019)
Industry MB	-0.109**	-0.088***	-0.108**	-0.088***
	(0.043)	(0.021)	(0.043)	(0.021)
Ln(Lagged Number of IPOs)	0.120***	0.066**	0.120***	0.066**
	(0.045)	(0.026)	(0.045)	(0.026)
Ln(Lagged Number of MAs)	-0.049	0.010	-0.054	0.010
	(0.101)	(0.069)	(0.101)	(0.069)
Observations	19,495		19,495	
Fixed Effects	YES		YES	
Adjusted/Pseudo R-Square	0.149		0.149	

Table A1: Variable Definition

IPO Related Variables	
Initial Return	The percentage return from the offer price to the first trading day closing price.
Lead VC Reputation	The dollar amount invested by a given VC for all entrepreneurial firms during the previous three years, scaled by total amount raised by all entrepreneurial firms.
Tech Dummy	A dummy variable equals one if the startup company is an internet or technology firm, defined as in Loughran and Ritter (2004).
Top-tier Dummy	A dummy variable equals one if there is at least one underwriter has a rank of nine, defined as in Loughran and Ritter (2004).
Prior Market Return	The market return for the thirty trading days preceding the IPO date.
Share Overhang	Share Overhand is the ratio of retained shares to the total shares offered. Retained shares are calculated as the difference between total shares offered and secondary shares offered.
Ln(Age)	The natural log of the IPO year minus the firms founding year, where founding dates are obtained from the FieldRitter dataset, as used in Loughran and Ritter (2004). If the founding year is missing in the FieldRitter dataset, we use the founding year obtained from VentureExpert.
Ln(Proceeds)	The natural log of proceeds amount of issue, in millions of dollars, calculated as the offer price multiplied by number of the shares offered.
Institution Participation Variables	
Institution Shares	The total dollar amount invested by all institutional investors, scaled by the total dollar amount invested by all VC investors.
Institution Numbers	The total number of institutional investors, scaled by the total number of VC investors.
LP Institution Shares	The total dollar amount invested by all institutions with at least one institutional LP, scaled by the total dollar amount invested by all investors.
LP Institution Numbers	The total number of investors with at leas6t one institutional LP, scaled by the total number of investors.
Scandal	A dummy variable that equals one if a potential institution-startup pair is affected by the scandal. Specifically, we consider an pair to be affected by the scandal if 1) the potential investor is involved in the 2003 scandal, 2) the first financing round is earlier than the 3 year anniversary of the scandal, and 3) the startup has not exited at the time of the scandal. A institution is deemed to be a potential investor if 1) the institution has private market investment in the same industry before the given startup exits.

Cross-section Variables

|Forecast Error|	The industry forecast error is the industry value-weighted average absolute forecast error of quarterly earnings, weighted by market capitalization at the beginning of the earnings announcement month. Firm-level forecast error is calculated as the absolute difference between the most recent consensus forecast and actual earning, scaled by lagged share price. Consensus forecast is measured as the median forecast within 90 days of earnings release using the IBES unadjusted detail-history file.
Industry Volatility	Industry volatility is the 24-month industry return volatility, using the monthly Fama-French 12 industry return obtained from Kenneth Frenchs website.
All-star Dummy	A dummy variable equals one if the IPO is covered by an Institutional Investor all-star analyst (top three) from the bookrunner within one year of the IPO, as defined in Ritter and Liu (2011).
Excess Return	The excess return is the weighted average of 24-month excess return over risk-free rate of all institution investors. More specifically, we first calculate the quarterly excess returns using average excess returns for all the stocks held by the institution, weighted by the beginning-of-quarter holding value. We then compound the quarterly institution excess return to eight quarters. If there are more than one institution investor for a given startup, we average across all institution investors, weighted by institutions investment amounts.
DGTW Return	The DGTW return is the weighted average of 24-month DGTW adjusted return of all institution investors. The More specifically, we first calculate the quarterly DGTW adjusted return using average DGTW adjusted return for all the stocks held by the institution, weighted by the beginning-of-quarter holding value. We then compound the quarterly institution DGTW adjusted return to eight quarters. If there are more than one institution investor for a given startup, we average across all institution investors, weighted by institutions investment amounts.

Exit Variables	
Exit Category	A categorical variable equals one if a company goes public, two if a company is acquired, and three if a company is liquidated.

Entrepreneurial Firms and Exit Market Characteristics	
Lead VC Reputation	The dollar amount invested by a given VC for all entrepreneurial firms during the previous three years, scaled by total amount raised by all entrepreneurial firms.
Ln(Startup Age at First Round)	The natural log of the entrepreneurial firms age at first round.
Ln(Number of Rounds)	The natural log of total number of rounds.
Ln(Number of VCs)	The natural log of total number of VC firms.
Ln(Total Amount Raised)	The natural log of total dollar amount raised by the entrepreneurial firm
Early-stage Dummy	A dummy variable equals one if the startup company is at seeding or startup stage at the first round.
Industry MB	The average market-to-book ratio in the SIC-2 industry of the entrepreneurial firm in the quarter prior to company's exit.
Ln(Lagged Number of IPOs at Exit)	The natural log of total number of IPOs in the quarter prior to entrepreneurial firm's exit.
Ln(Lagged Number of MAs at Exit)	The natural log of total number of M&As in the quarter prior to entrepreneurial firm's exit.
Institution VC reputation	The number of IPOs backed by a given institution investor during the previous three years, scaled by total number of IPOs.

Fixed Effects	
IPO Year Fixed Effects	Dummy variables for the year of IPO.
Industry Fixed Effects	Dummy variables for the Fama-French 12 industry.
Exit Year Fixed Effects	Dummy variables for the year of the entrepreneurial firms exit.
State Fixed Effects	Dummy variables for the state of the entrepreneurial firm.
Industry Fixed Effects	Dummy variables for the SIC-2 industry of the entrepreneurial firm.

Table A2: Institutions' Participation and IPO Cost

This table reports the result of how institutions participation affect IPO costs. We report OLS regression results. The dependent variable is Gross Spread, which measures the gross underwriting spread, scaled by gross proceeds dollar amount of issuance and Proceeds Retention, which measures the ratio of the net proceeds to the gross proceeds. The key independent variables are *Institution Shares*, which measures the total dollar amount invested by all institutional investors, scaled by the total dollar amount invested by all investors and *Institution Numbers*, which measures the total number of institutional investors, scaled by the total number of VC investors. We also include the following control variables: *Lead VC Reputation*, *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO year fixed effects and industry fixed effects. The standard errors are clustered at IPO year level. Standard errors are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

	Panel A: Gross Spread		Panel B: Proceeds Retention	
	(1)	(2)	(3)	(4)
Institution Shares	-0.043**		0.299***	
	(0.020)		(0.081)	
Institution Numbers		-0.051**		0.329***
		(0.021)		(0.077)
VC Reputation	-0.037***	-0.038***	0.042	0.049
	(0.013)	(0.013)	(0.104)	(0.104)
Tech Dummy	0.095	0.096	0.004	0.001
	(0.067)	(0.067)	(0.447)	(0.446)
Top-tier Dummy	-0.233***	-0.231***	1.266***	1.252***
	(0.034)	(0.033)	(0.409)	(0.408)
Prior Market Return	0.012	0.012	0.349**	0.349**
	(0.014)	(0.014)	(0.155)	(0.154)
Share Overhang	-0.091***	-0.090***	0.135	0.135
	(0.026)	(0.026)	(0.163)	(0.164)
Ln (Firm Age at IPO Date)	-0.078***	-0.077***	0.675***	0.668***
	(0.024)	(0.024)	(0.219)	(0.219)
Observations	1,899	1,899	1,452	1,452
Fixed Effects	YES	YES	YES	YES
Adjusted/Pseudo R-Square	0.160	0.161	0.036	0.036

Table A3: Mutual Fund Participation and IPO *Initial Return*

This table reports the results of how Mutual Fund pre-IPO participation affect IPO underpricing. We report OLS regression results. The dependent variable is the *Initial Return*, which measures the percentage return from the offer price to the first trading day closing price. The key independent variables are MF Participation, which is a dummy variable that equals one if an mutual fund invested in a given firm before IPO. We also include the following control variables: *Tech Dummy*, *Top-tier Dummy*, *Prior Market Return*, *Share Overhang*, *Age*, *Proceeds*. The definition of the control variables are reported in the appendix Table A1. We also include IPO Year Fixed Effects and Industry Fixed Effects. The standard errors are clustered at IPO year level. T-statistics are reported in the parentheses. Significance Level: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

	(1)	(2)	(3)
MF Participation	0.047	0.062	0.063
	(0.067)	(0.059)	(0.058)
Tech Dummy	0.060**	0.082***	0.044**
	(0.023)	(0.021)	(0.021)
Top-tier Dummy	0.059*	0.047*	0.049**
	(0.031)	(0.024)	(0.023)
Prior Market Return	0.012***	0.012***	0.013***
	(0.004)	(0.004)	(0.004)
Share Overhang	-0.008	0.006	0.004
	(0.008)	(0.005)	(0.005)
Ln (Age)	-0.038***	-0.025***	-0.027***
	(0.012)	(0.007)	(0.007)
Ln (Proceeds)	0.024***	-0.002	0.001
	(0.007)	(0.004)	(0.004)
Observations	4,966	4,970	4,966
IPO Year Fixed Effects	NO	YES	YES
Industry Fixed Effects	YES	NO	YES
Adjusted R-Square	0.109	0.192	0.201