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Venture Capital, Angel Financing, and Crowdfunding of Entrepreneurial Ventures: A Literature Review

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Venture Capital, Angel Financing, and Crowdfunding of Entrepreneurial Ventures: A Literature Review

Johannes Wallmeroth^{1,2}, Peter Wirtz² and Alexander Peter Groh¹

ABSTRACT

Venture capital, angel financing, and crowdfunding have evolved and matured in the entrepreneurial finance market. These market developments have also been accompanied by a growing body of research. In this monograph, we provide an overview of a vast body of literature in the field of entrepreneurial equity finance, presenting the current state of research and succinctly identifying its subcategories. We also provide insight into major research trends and research gaps and examine the growing research field of cognition in entrepreneurial equity finance. Our review is structured using a theoretical framework that aims to link venture capital, angels, and crowdfunding whilst considering the significant differences exhibited between each investment stage.

Johannes Wallmeroth, Peter Wirtz and Alexander Peter Groh (2018), "Venture Capital, Angel Financing, and Crowdfunding of Entrepreneurial Ventures: A Literature Review", Foundations and Trends in Entrepreneurship: Vol. 14, No. 1, pp 1–129. DOI: 10.1561/0300000066.

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Introduction

Entrepreneurial finance is a vague term and can refer to numerous, interconnected elements of alternative investment finance. In the Oxford Handbook of Entrepreneurial Finance (Cumming, 2012), entrepreneurial finance is defined as a topic that covers several sources of capital, such as angel investors, venture capital, private equity, hedge funds, microfinance, project finance, and more. In this monograph, we focus on three of these principal components – institutional financing (in the shape of formal venture capital), angel financing, and crowdfunding – in order to identify and analyze the academic literature in entrepreneurial equity finance.

In order to provide a connected overview of the academic literature, we believe that it is essential to propose a framework upfront. We present the cornerstones of this monograph in an interconnected style rather than individually. This offers the additional benefit of analyzing literature that investigates the interplay between these market forces, rather than a simple investigation of each financing technique's individual contribution. We can therefore provide a sense of the overall market dynamics. We develop a theoretical framework that not only provides insight into the different sources of entrepreneurial equity finance but

also guides the monograph's structure. Due to the complexity of these fields, and the large amount of research that has been published, this monograph focuses on selected publications and does not include publications dealing with financial capital provided by government funds, subsidies, banks, or other alternative sources of capital other than the aforementioned three financial mechanisms.

1.1 Research in Entrepreneurial Finance: A Conceptual Framework

Our literature review of entrepreneurial finance makes two contributions. First, it offers a better understanding of the characteristics and evolution of the players in the entrepreneurial equity finance market, individually and collectively. Second, it provides insight into the economic functions these financial mechanisms assume in the field of entrepreneurship and innovation (see Figure 1.1). These functions can be categorized along the typical investment process of an entrepreneurial venture (Bonnet and Wirtz, 2011), from the identification and evaluation of investment opportunities to the exit and return received from realized investments. In other words, how can we explain the influences exerted by players at different stages of the investment process and the outcomes they produce? How do these influences differ when these players act together? This literature review shows that cognition, knowledge, skills, and other human and social capital resources are recognized as part of the explanation (Bonnet and Wirtz, 2011; Cumming and Johan, 2007; Uhlaner et al., 2007; Wirtz, 2011). Managing information asymmetry and agency conflicts through monitoring and interest alignment is another prominent dimension (Cumming and Johan, 2008; Van Osnabrugge, 2000).

The market for entrepreneurial finance has evolved significantly over the last thirty years. Formal venture capitalists (VCs) were the first to enter the field. They emerged in the US in the 1940s, and by the mid-1980s their professional practice had become institutionalized, gradually spreading across the globe (Bruton et al., 2005; Gompers, 1994). The institutionalization and spread of the profession coincided with intensified research efforts and was primarily driven by the US decision to alter the maximum capital gains tax rate in 1978, which significantly increased the inflow of pension fund capital into venture capital funds.

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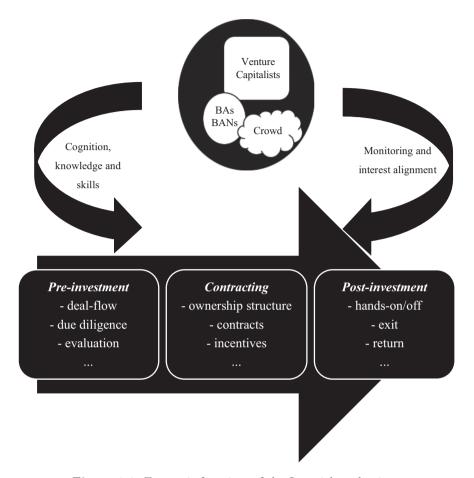


Figure 1.1: Economic functions of the financial mechanisms

The amendment made to ERISA (the Employee Retirement Income Security Act) was also a driving factor (Gompers, 1994; Gompers, 1995; Swartz, 1991). Mirroring the growth of funds¹ and the increase in institutionalization, research on professional VCs took off in the mid-1980s and has developed exponentially ever since. This growth can be seen from a keyword search of the Scopus database (see Figure 1.2). The

¹Swartz (1991) notes that a fund managing USD 5 to 10 million would have been impressive in the early 1970s, compared to a size of 20 to 25 million by the end of that decade and continuous growth in the 1980s.

1.1. Research in Entrepreneurial Finance: A Conceptual Framework

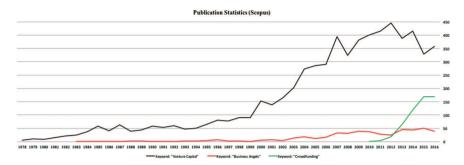


Figure 1.2: Scopus publication statistics In this chart, we show the results of the keyword search performed on the Scopus database. The results range from 1978 to 2016. Black: "Venture Capital"; Red: "Business Angels": Green: "Crowdfunding".

research produced helps us to understand the specific characteristics and working practices of the VC industry, such as its professional routines, investment behavior, syndication with other VCs, interaction with entrepreneurs, exits, and venture success (Manigart and Wright, 2013, also provide insight into venture capital dedicated research).

The second curve (in red, Figure 1.2) shows the inception and development of business angel (BA) research. Academic interest in business angels is much more recent, with most research activity in the field only gaining momentum in the early 2000s. This is partly due to the long-established and repeatedly found fact that the angel market has an "invisible" component (Mason, 2006; Wetzel, 1983; Wetzel, 1987; Wetzel, 1994). As can be seen, new players in the entrepreneurial equity finance market enter the field at different points in time. The way these players do business, alone and in connection with others, also changes over time – they effectively adapt to technologies and more liberal markets as we will see in this review. Business angels, also called informal venture capitalists, have become more important during these changes because they are perceived as a potential solution for closing the equity gap in early-stage financing. Business angels, in other words individuals who invest their own money, have progressively united and created formal business angel networks (BANs) and groups to build a more structured and visible market for angel finance. Government support has aimed to narrow the funding gap, and so the development 6 Introduction

of BANs has found additional support, making the market increasingly visible and thereby facilitating research.

Crowdfunding, the newest development and influencer in academic entrepreneurial finance research, also shown in Figure 1.2 (green curve), has been the latest source of finance to enter the field. This progress can be traced to numerous sources, such as technological progress brought by the internet, the associated social media channels, and the ongoing regulatory changes in financially savvy countries. These tools and circumstances have enabled crowdfunding to enter the alternative finance market as the youngest mechanism, with the term being coined in 2006 and research gaining traction at the beginning of the present decade (Everett, 2014).

Moving beyond the early years of these market practices, entrepreneurial finance research is currently a dynamic field. Many studies focus on one specific mechanism (VCs, BAs, or crowdfunding), examining various questions related to one or more of the investment stages outlined above. Some works set out to examine co-investments involving the same type of financial mechanism. Others investigate the interaction between two or more different financial techniques, either simultaneously (syndication) or over time (sequential co-investment over different financing rounds). We therefore categorize the vast body of literature on early stage venture finance according to the following structure (see Table 1.1). The paper by Cosh et al. (2009) is of particular interest on this point. The authors note that studies of one or two of these investor types are limited by a lack of available data, by the similarities of their theoretical approaches, and by the difficulty of modeling such interactions. The authors discuss two paths of research in which studies of investor types overlap: firstly, the mitigation of information issues and secondly, the screening of investment decisions and their ability to aid the venture. Both paths have been studied for venture capitalists and business angels and, more recently, not just for each investor individually but also for co-investments.

This framework, which helps outline the existing literature as well as the future research potential, also provides the structure for this monograph. It comprehensively defines these entrepreneurial finance

1.1. Research in Entrepreneurial Finance: A Conceptual Framework

Table 1.1: Research categories in entrepreneurial finance

Investment Process Behavior of and outcomes for entrepreneurial finance market participants	Pre-investment Selection Evaluation	Investment Ownership structure Contracting (incentives, governance)	Post-Investment Behavior Growth Success/failure	Round 2, if relevant
Venture Capitalists Characteristics	Amit et al. (1998); Balboa and Marti (2001); Barry (1994); Bengtsson and Hau (2010); Berger and Udell (1998); Bhide (1994); Black and Gilson (1998); Bottazzi et al. (2001); Brander et al. (2002); Bruton et al. (2005); Bygrave (1987); Chemmanur and Tian (2011); Cherif and Gazdar (2011); Cherif and Gazdar (2011); Cooper (1985); Cumming and Dai (2010); Cumming and Cherif and Gazdar (2011); Cooper (1985); Cumming and Clang (2016); Cumming and Clang (2016); Fenn et al. (2013); De Clercq et al. (2006); Devigne et al. (2016); Fenn et al. (1997); Fenn et al. (1997); Fenn et al. (2006); Gompers (1994); Gompers (1997); Gompers (1994); Gompers (2005); Gompers et al. (2006); Gray and Wallmeroth (2016); Grob and Wallmeroth (2016); Grob and Wallmeroth (2015); Hochberg et al. (2017); Jeng and Wells (2000); Kaplan and Lerner (2010); Kaplan and Lerner (2010); Khavul and Lerner (2010); Khavul and	Bengtsson (2011); Berger and Udell (1998); Campbell and Hye (2008); Codrane (2005); Cumming (2008); Codrane and (2009); Collor farb et al. (2014); Gompers (1994); Gompers (2004); Gompers (2008); Hellmann (2006); Ibrahim Perg (2008); Kaplan and Strömberg (2004); Kaplan and Strömberg (2004); Kaplan and et al. (1999); MacMillan et al. (1985); Sahlman (1990)	Audretsch and Lehmann (2004); Barry et al. (1990); Bonini et al. (2012); Bock and Schmidt (2014); Bottazzi et al. (2008); Bruton et al. (2017); Buchner et al. (2017); Buchner et al. (2017); Casamatta and Haritchabalet (2007); Cooper and Carleton (1979); Cumming and Johan (2008); Cumming and Johan (2008); Cumming and Johan (2008); Daily et al. (2003); Gompers and Lenner (2001); Gompers and Lenner (2001); Gompers et al. (2016); Gompers et al. (2016); Gompers et al. (2016); Gompers et al. (2019); Gompers et al. (2019); Gompers et al. (2010); Gompers et al. (2011); Kandel et al. (2011); MacMillan et al. (1987); Manigart et al. (2001); Martin and Petty (1988); Mason and Harrison (1988); Mason and Harrison (1988); Moore et al. (2015); Nahata (2008); Puri and Zarutskie (2012); Rocch	Chahine et al. (2007); Chemmanur and Tian (2011); Cochrane (2005); Hellmann and Thiele (2015); Kaplan and Schoon (2005); Kaplan and Strömberg (2004); Lerner (1994a);

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Table 1.1: Continued

Investment Process Behavior of and outcomes for entrepreneurial finance market participants	Pre-investment Selection Evaluation	Investment Ownership structure Contracting (incentives, governance)	Post-Investment Behavior Growth Success/failure	Round 2, if relevant
	Deeds (2016); Knockaert et al. (2003); Lerner (1994a); Lerner (1995). Lockett and Wright (2001); Lumme et al. (1998); MacMillan et al. (1985); MacMillan et al. (1987); Manison (1996); Mason and Harrison (1996); Morrissette (2007); Muzyka et al. (1996); Nahata (2008); Nahata et al. (1996); Nahata (2008); Nahata et al. (1992); Ooghe et al. (1991); Parhankangas and Hellström (2007); Reiner (1989); Romain and van Pottelsberghe de la Potterie (2004); Ruhnka and Young (1991); Sahlman (1988); Sahlman (1988); Sahlman (1988); Sahlman (1990); Shepherd and Zacharakis (2002); Shepherd and Salhman (1980); Shepherd and All. (1987); Sverenson et al. (1987); Whane et al. (1987); Whane et al. (1987); Wingi and de Haan (2007); Wingi and de Haan (2003); Warne		(1968); Rosenstein et al. (1993); Sahlman (1990); Sapienza (1992); Sapienza et al. (1996); Swartz (1991); Tyebjee and Bruno (1984); Walske et al. (2007); Wright et al. (2002)	

1.1. Research in Entrepreneurial Finance: A Conceptual Framework

Table 1.1: Continued

Round 2, if relevant	Chahine et al. (2007); Croce et al. (2016b); Goldrab et al. (2014); Hellmann and Thiele (2015); Kerr et al. (2014); Leavitt (2005); Mason and Harrison (2002)
Post-Investment Behavior Growth Success/failure	Bonnet and Wirtz, 2011; Bonnet and Wirtz (2012); Bonnet and Wirtz (2012); Capizzi (2011); Capizzi (2011); Capizzi (2011); Collewaert (2008); Collewaert et al. (2010); Croce et al. (2016a); Elitzur and Gavious (2003); Gregson et al. (2010); Mason and Harrison et al. (2010); Wiltbank and Boeker (2007)
Investment Ownership structure Contracting (incentives, governance)	Dushnitsky et al. (2016); Hainz and Hormit (2016); Hart and Helmström (2016); Goldfarb et al. (2014); Ibrahim (2008); Wiltbank and Bocker (2007); Wong et al. (2009)
Pre-investment Selection Evaluation	Aernoudt (1999); Amatucci and Sohl (2004); Balachandra et al. (2014); Berger and Udell (1998); Bonnin et al. (2016); Bonnet and Wirtz (2011); Bonnet et al. (2013); Bruton et al. (2015); Capizzi (2011); Capizzi (2011); Capizzi (2015); Capizzi et al. (2016); Capizzi et al. (2016); Croce et al. (2016); Croce et al. (2016); Gregson et al. (2016); Harrison et al. (2016); Hindle and Lee (2002); Drahim (2008); Lerner (1998); Mason and Botelho (2014); Mason et al. (2016); Mason and Harrison (1996); Mason and Harrison (1996); Mason et al. (1991); Mitteness et al. (2012); Murnièss et al. (2019); Mitteness et al. (2012); Murnièss et al. (2019); Mitteness et al. (1991); Mitteness et al. (2019); Wetzel (1998); Schwienbacher (2009); Poiltis and Boeert (2013); Wetzel (1998); Wetzel (1983); Wetzel (1983); Wetzel (1983); Wetzel (1981); Wetzel all. (2015)
Investment Process Behavior of and outcomes for entrepreneurial finance market participants	Business Angels Characteristics: knowledge, cognition, financial stake

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Table 1.1: Continued

Round 2, if relevant	Drover et al. (2017)	
Post-Investment Behavior Growth Success/failure	Agrawal et al. (2015); Ahlers et al. (2015); Colombo and Bayus (2015); Cholakova and Clarysse (2015); Cholakova and Clarysse (2015); Colombo et al. (2015); Hervé et al. (2016); Horn and Schwienbacher (2016); Mamonov et al. (2017); Mödlick (2017); Mollick (2017); Mollick (2017); Mollick (2017); Mollick (2016); Vismara (2016); Vismara (2016); Vismara (2016a)	Bonnet and Wirtz, 2012; Bruton et al., 2015; Dutta and Folta (2016); Hellmann et al. (2015); Mason and Harrison (2002); Vanacker et al. (2013)
Investment Ownership structure Contracting (incentives, governance)	Brown et al. (2015); Hart and Helmström (2016); Hornuf and Schwien-bacher (2015b); Hornuf and Schwienbacher (2012); Klöhn and Hornuf (2012); Klöhn and Hornuf (2012); Klöhn et al. (2016); Schwienbacher and Larralde (2010); Signori and Vismara (2016); Wroldsen (2016)	Hornut and Schwien- bacher (2015b); Hornuf and Schwienbacher (2015a); Brown et al. (2015)
Pre-investment Selection Evaluation	Agrawal et al. (2014); Agrawal et al. (2015); Ahlers et al. (2015); Belleflamme et al. (2015); Belleflamme et al. (2015); Belleflamme et al. (2015); Brown et al. (2015); Bruton et al. (2016); Bruton et al. (2016); Bruton et al. (2017); Cholakova and Clarysse (2017); Cholakova and Clarysse (2017); Everett (2014); Griffin (2013); Hervé et al. (2016); Hornuf and Schwienbacher (2015b); Hornuf and Schwienbacher (2015); Lukkarinen et al. (2016); Lukkarinen et al. (2016); Parhankangas and Renko (2017); Paul et al. (2017); Riding et al. (2007); Rid	(20109); Visinara (2010a); Bonnet and Wirtz, 2012; Bruton et al. (2015); Goldfarb et al. (2014); Harrison and Mason (2000); Schwienbacher (2009); Van Osnabrugge (2000)
Investment Process Behavior of and outcomes for entrepreneurial finance market participants	Crowd Characteristics	Interaction

players in their theoretical settings and outlines the current empirical literature examining them. Researchers interested in these fields require a solid understanding of the way they interact. Given the vast amount of literature available for some topics and the scarcity of research available for others, it is essential to structure this research and to make it comprehensible. The present framework supports this challenge. Additionally, the interaction between these investor groups also needs to be understood: it represents a growing research topic and must be given a certain degree of emphasis. Our monograph aims to provide theoretical and empirical information on these financial mechanisms and the way they interact during each stage of the investment process. Another point of interest is the development of key research topics. Each of the mechanisms has its own historical developments and themes, occurring in different years or even decades, which will be discussed in detail in the respective subsection for each financial mechanism.

1.2 The Role of Data in Entrepreneurial Finance Research

Although formal venture capital literature, for instance, has developed strongly since the 1980s, more modern research topics for this financial mechanism require new datasets with new variables. If such data is not available, the pace of research slows down, even today. This notion is seen in Barry (1994), who used data available in the early 1990s to claim that research in the field of venture capital is complex for multiple reasons. These reasons include the difficulty of gathering data on private investments – a difficulty that the author noted was slowly being overcome by the creation of new databases at the time of publication, shedding light on venture capital related topics that had been unknown in the 1980s. This process is then repeated with the discovery of new research questions (related to syndication and co-investments, for example), which often require new databases with new variables. This indicates that researchers firstly seek to identify financial mechanisms and players in the market before attempting to understand their role and their behavior. Researchers are therefore able to classify financial products and players, and place them within the field of entrepreneurial finance, which ultimately evolves into the pursuit

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of more sophisticated research questions. This process is closely tied to the availability of data – an interesting research question ultimately requires the corresponding data in order to provide an answer. After classifying behaviors, empirical studies (in general), of which a great deal are survey- and interview-based, examine the influence, impact, and implications of the previously studied behavior. The research step of understanding the financial mechanism is (in the case of VC and crowdfunding research) accompanied by scholarly work on the success factors of such investments.

Cumming and Vismara (2017) claim that the data available to scholars also partly explains the segmentation of entrepreneurial equity finance research. The authors note that recent articles examine data collected specifically for a single study, emphasizing the challenge of conducting entrepreneurial finance research. This segmentation is extended by a frequent failure to acknowledge different specialties, with some journals preferring to retain their own focus rather than cite outside fields (the authors use entrepreneurship journals and finance journals, which do not cite one another, as an example). The authors conclude that entrepreneurial finance research is perhaps more segmented than other fields and that previous conclusions ought to be readdressed with new datasets in order to promote the development of research and to focus on future interdisciplinary studies.

The remainder of this article is set out in five sections. The following three sections cover the individual mechanisms in their order of inception. Each of these sections contains sub-sections addressing the three investment stages of the framework. The monograph therefore continues with a section on venture capital literature, followed by business angel literature, and finally crowdfunding literature. These individual sections are then expanded by a section discussing the interactions between the mechanisms, after which the monograph concludes.

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