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Financing entrepreneurship by risk capital - evidence revisited

Katharina Fellnhofner
Lappeenranta University of Technology
School of Business and Management
Lappeenranta University of Technology
P.O. Box 20, FI-53851 Lappeenranta, Finland
Email: katharina.fellnhofner@lut.fi

Abstract: This paper summarises the large body of literature dedicated to risk capital within entrepreneurship. This work attempts to advance this field of research and identifies crucial research prospects by examining and evaluating the current body of literature by means of a literature review using a qualitative and quantitative approach. Multi-level comparisons of previous discussions and studies on the perspectives of different market participants reveal gaps that warrant further critical debate. Having synthesised the existing body of literature, the paper concludes by proposing three essential directions for the future while calling for stronger (theoretical) ties between the finance and entrepreneurship literature.

Key words: risk capital, private equity, venture capital, literature review, entrepreneurial finance.

Bibliographical notes:

As an Erwin Schrödinger Fellow Katharina Fellnhofner is a visiting researcher at the Lappeenranta University of Technology, Finland. In addition, she is the SME owner of Research and Innovation Management GmbH. She holds a Ph.D. in economic sciences from the University of Innsbruck, Austria.

1. INTRODUCTION

The main aim of this paper is to present a structured literature review of the current developments and trends in the field of risk capital as an entrepreneurial source of finance. This endeavour contributes to the existing

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knowledge by synthesising two main research clusters, namely the supply and demand sides, critically assessing the literature addressing both these perspectives. Thus, it sheds light on the existing research gaps, and represents one of the first reviews of the risk capital literature from an entrepreneurship context.

Risk capital has emerged as a crucial mediator in financial markets as well as an essential source of growth (Belussi and Sedita, 2015; Gompers and Lerner, 2001; Kobeissi and Wang, 2009; Mlodawska, 2012). The increasing awareness of these facets, acknowledged by different viewpoints, necessitates a deeper understanding of these developments in both the entrepreneurship as well as in the finance literature, as is attempted in this paper. A robust two-dimensional literature overview is thus presented by merging two different perspectives and roles, leading to a more precise picture of the unanswered research questions. The main focus of this effort is to consolidate the academic research on risk capital within the entrepreneurship sphere while stressing issues as yet unknown.

The paper starts with a methodology section, which is followed by a discussion of the underlying framework and a detailed examination of earlier investigations in associated fields. On the basis of an in-depth debate on the scope of research along with central themes from different perspectives, the resulting future research paths are summarised. The article concludes with a discussion of the limitations and some final remarks on the theoretical and practical implications.

2. METHODOLOGY

This study employs a modified classification matrix of the research methods used in the study of risk capital to categorise the current research and identify research gaps (Behzadian et al., 2010; Langer and Stewart, 2014). Methodologically, the approach of developing a classification matrix has been implemented in several literature reviews (e.g. Carnevalli and Miguel, 2008; Debata et al., 2013; Hage et al., 2013; Winter and Knemeyer, 2013;) and has been used by several entrepreneurship scholars (e.g. Fellnhofer, 2015; Peiris et al., 2012; Schaltegger and Wagner, 2011). This examination is useful to explore crucial interactions between two major research clusters in terms of the methods employed in this field of research. The different clusters present vital outcomes of diverse research designs, which are simultaneously relevant to academic work throughout the entire scientific field. By separating the research field into two different clusters

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on the basis of their primary focus, namely the supply and demand sides in risk finance, this article will serve as the vital basis for further interesting research paths.

2.2 Data

I searched for the terms ‘risk capital’ and ‘entre*’ in the titles, abstracts and author keywords of papers published in peer-reviewed scientific journals using the electronic databases Scopus, ScienceDirect, EBSCO, JSTOR, ProQuest and Web of Science. A total of 149 articles were found, and after eliminating duplicates, the final review consisted of 83 articles published before the end of 2014. This time period ensures the comprehensiveness of each year and fair consideration of the published documents under each year of investigation. These publications were scanned multiple times to ensure high quality corpus for the literature review.

3. THE BODY OF LITERATURE

Despite increasing interest in the body of literature dedicated to financing entrepreneurship with risk capital, the term *risk capital* itself lacks a clear and well-established definition (Dutta and Babbel, 2014). When an entrepreneur undertakes new innovative ventures, related activities will generally increase the enterprise’s overall risk, which in turn will increase the demand for risk capital (Baule, 2012). Generally speaking, risk capital consists primarily of venture capital, private equity and innovative combinations of these two (Belussi and Sedita, 2015; Davila et al., 2003; Wright and Robbie, 1998). In this context, venture capital refers to capital or funds invested in start-ups (Cochrane, 2005; Kannianen and Keuschnigg, 2003; Kannianen and Keuschnigg, 2004; Reddy and Subbaiah, 2011) while private equity refers to capital or funds invested in established enterprises (Achleitner et al., 2010; Cressy et al., 2007; Daniel, 2012). In other words, from the perspective of financing partners, risk capital relates to funds created for high-risk, high-reward projects (Gompers and Lerner, 2001; Mlodawska, 2012). Overall, risk capital represents an essential resource for entrepreneurship and growth (Pandey et al., 2003; Samitas and Kenourgios, 2005; Wetzel Jr, 1987) even though a shared definition for the term may still be lacking (Kuritzkes, 2002).

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3.1. The spectrum of the review

Since 1970, the number of academic articles on risk capital for high-risk entrepreneurial ventures has been continuously growing. This work categorises the studies on the basis of their methodological approaches, i.e., qualitative or quantitative (Table 1a). Because of the complex nature of entrepreneurial risk finance and how it is theoretically understood, most of the articles reviewed have opted for a qualitative approach, including approximately 66% conceptual papers, reviews or similar, and roughly 18% theoretical models or similar. Overall about 16% are in the form of case studies or used interviews as an approach.

Quantitative approach		Qualitative approach	
Descriptive explorations or similar	5	Discussion of cases, interviews or similar	13
More complex analysis such as factor, regressions, etc.	11	Dominant theoretical approach	15
		Conceptual papers or similar	55
Sum of peer-reviewed publications using quantitative methods	16	Sum of peer-reviewed publications using qualitative methods	83

Table 1a: Approaches used in peer-reviewed publications with ‘risk capital’ AND ‘entre*’ in the title, abstract or author keywords

Quantitative research methods are rare. Only 19% of all studies reviewed have applied quantitative methods, whereas factor analyses and regressions are frequently used: in 69% of the quantitative studies (e.g. Bruno and Tyebjee, 1985; Harrison and Mason, 1992; Maculan and Pavani, 2005; Modigliani and Perotti, 1997b; Mlodawska, 2012; Pandey et al., 2003; Reddy and Subbaiah, 2011; Tyebjee and Vickery, 1988; White et al., 2009; Wong and Ho, 2007; Yazdanfar and Turner, 2012). Overall, when discussing the phenomenon of risk capital, researchers have relied on different combinations of concepts such as agency theory or Knightian uncertainty (e.g. Sørheim et al., 2011), asymmetric information (e.g. Wright and Robbie, 1998) and the political model theory (e.g. Smith, 1997) using principles and constructs drawn from institutional theory, alliance theory and innovation management (e.g. Carayannis *et al.*, 2014).

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		Qualitative approach		
		Discussion of cases, interviews or similar	Dominant theoretical approach	Conceptual papers or similar
Quantitative approach	Methodological approach of peer-reviewed publications with ‘risk capital’ AND ‘entre*’ in title, abstract or author keywords			
	Descriptive explorations or similar	0	2	3
	More complex analysis such as factor, regressions, etc.	1	0	0

Table 1b: Risk finance studies applying a mix-methods approach

Table 1b lists studies employing both qualitative and quantitative methods. As shown, only a few contributions in this review have applied this mixed-methods approach (e.g. Groh *et al.*, 2009; Groh and Liechtenstein, 2011a; 2011b; Harrison and Mason, 1992; Landström, 1998). Scholars argue that mixed methods increase the overall quality of the research (Bryman *et al.*, 2008; Honold, 2000). Increasingly, these approaches are being sought in various research fields. Multi-layered abstraction requires multi-dimensional constructs, and the use of these mixed methodological angles presents a comprehensive picture of the whole phenomenon studied (Zachariadis *et al.*, 2013). Miscellaneous methods contribute to risk capital research by addressing open opportunities stressed in prior studies. Accordingly, further research questions in the field of risk capital can be adequately addressed by these approaches, and also further explored from a broader perspective. Additionally, specific issues will be better answered through mixed methods (Molina-Azorín *et al.*, 2012).

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Perspective of risk capital financing partners	51	61%
Entrepreneur's perspective	19	23%
Both perspectives	13	16%
	83	100%

Table 2: Review studies by perspectives

Table 2 shows that majority of the publications, approximately 61%, address the issues of risk capital financing partners, whereas only 16% of the articles address both perspectives. In the following sections, the two research clusters – where the design focuses on the entrepreneur's perspective and those that focus on the financing partners' perspective – will be discussed in detail to identify open research questions.

3.2 Central themes from different perspectives

3.2.1 Focus on the financing partners' perspective

Table 3a outlines the methods employed in the 51 peer-reviewed articles that focus on the point of view of the risk capital financing partners in the field of entrepreneurial research. It also lists the reviewed publications that applied quantitative methods. Quantitative methods have not received much attention in the current body of entrepreneurial finance research. Only four descriptive exploratory studies have been published. For instance, Belussi and Sedita (2015) use a theoretical model to scrutinise different models of financing enterprises in Italy. Another conceptual paper with exploratory analyses has been published by Groh (2011c). They investigated the criteria of market participants allocating risk capital in Central Eastern European countries and found that these financiers prefer team autonomy and complementarities in their strategies with respect to the teams' environments. Another descriptive study by Groh and Liechtenstein (2011b) finds that the protection of property rights is a crucial determining factor, next to regional stable partnerships and managerial ability among entrepreneurs. Finally, Groh et al. (2010a) showed that partners rank Central Eastern European countries as promising as India and China in terms of growth potential and deal prospects. These studies are in line with other contributions on the success factors of private equity investments in developing countries (e.g. Fellnhofer and Thiele, 2014). Another study that uses both qualitative and quantitative methods has been published by

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Harrison and Mason (1992), who conclude that the information networks available to European risk market participants are less efficient and qualitative than those in America (see Table 3b).

As outlined in Table 3a, seven studies s have applied factor or cluster analysis and correlation or regression analysis to discuss topics ranging from the investment characteristics in Singapore (Wong and Ho, 2007) to innovative risk capital perspectives in Brazil (Maculan and Pavani, 2005). Some authors have focused on the market participants' poorly protected rights in security market dealings (Modigliani and Perotti, 1997a), while others have investigated the differences in venture capital activities in European countries by examining different aspects of each country's environment (Tyebjee and Vickery, 1988) or focusing on the current Indian venture capital scenario (Reddy and Subbaiah, 2011).

Quantitative approach		Qualitative approach	
Descriptive explorations or similar	4	Discussion of cases, interviews or similar	5
More complex analysis such as factor, regressions etc.	7	Dominant theoretical approach	8
		Conceptual papers or similar	38
Sum of peer-reviewed publications using quantitative methods	11	Sum of peer-reviewed publications using qualitative methods	51

Table 3a: Studies based on the perspective of risk capital financing partners

As shown in Table 3a, five studies have used case studies or interviews as part of their qualitative research methods. For instance, Gómez Mejía (2010) study the relationship between financing strategy and the performance of the companies financed in Colombia. Haar et al. (1988) emphasise, basing their results on the United Kingdom and the United States, that discriminant analyses will support market participants to select winning ventures. The article by Harrison and Mason (1992) proposes several methodologies for the calculation of the risk adjusted return on capital (RAROC) for Brazilian banks. While Cooke (2004) discusses the importance of risk capital for biosciences in both America and Europe,

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Lawton (2004) presents a case study on one of the most intensive biotechnology clusters in Europe that was facing a shortage of risk capital.

The majority of the studies on risk capital are conceptual papers (38 articles, roughly 75% of those included). Interestingly, most of the contributions deal with market participants involved in informal investments; their characteristics and decision-making behaviours (Landstrom, 1995; Wong and Ho, 2007); their funding rejection determinants (Fischer, 1993; Jaffe, 2002; Müllner, 2012) or allocation determinants (Bühlmann, 2004; Georgi, 2007; Groh and Liechtenstein, 2011b); and their vital roles (Chandra and Silva, 2012; Timmons and Bygrave, 1986; Wetzel, 1983), which are affected by government interventions such as protection or support (Aernoudt, 1999; Lagarde, 2008; Modigliani and Perotti, 1997a; Reagan, 1985). As outlined in Table 3b only few studies have applied both quantitative and qualitative approaches simultaneously (e.g. Groh *et al.*, 2009; Groh and Liechtenstein, 2011a; 2011b; Tyebjee and Vickery, 1988).

Method of peer-reviewed articles focusing on the point of view of risk capital financing partners		Qualitative approach		
		Discussion of cases, interviews or similar	Dominant theoretical approach	Conceptual papers or similar
Quantitative approach	Descriptive explorations or similar	0	1	3
	More complex analysis such as factor, regressions etc.	1	0	0

Table 3b: Studies based on the perspective of risk capital financing partners that applied a mix-methods approach

Eight studies have applied theoretical models, and most have identified limited partnerships as an effective instrument in managing sustainable growth in companies (Groh *et al.*, 2009; Merrifield, 2004; Venkataraman,

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2004). They advocate asymmetric profit distribution and compensation (Jääskeläinen et al., 2007), which leads to steady relaxing of financial constraints through reduced investment/cash flow sensitivity (Colombo et al., 2014). Finance is undoubtedly crucial for growth (Belussi and Sedita, 2015; Gompers and Lerner, 2001; Kobeissi and Wang, 2009; Mlodawska, 2012; Tyebjee and Vickery, 1988), but generally entrepreneurs tend to encounter difficulties with underdeveloped risk capital markets (Belussi and Sedita, 2015; Samitas and Kenourgios, 2005; Sørheim et al., 2011; Tyebjee and Vickery, 1988). This leads us to the next subsection, where we closely examine the entrepreneur's point of view in the extant literature.

3.2.2 Focus on the entrepreneur's point of view

Entrepreneurship, as a driver of growth (Pandey et al., 2003), results in a highly positive impact of increased access to risk capital (White et al., 2009), including gender-specific structures of external financing for entrepreneurs in Sweden (Yazdanfar and Turner, 2012). In this review, six case studies or studies including interviews have analysed the positive entrepreneurial implications of risk capital (Table 4a) (Graves, 2011; Messica and Agmon, 2008; Saetre, 2003). In this regard a focus on different industries such as biotechnology (Helen Lawton, 2004), or formerly on mental health organisations (Zelman et al., 1985) and information technology, specifically semiconductors and computer aided design (Rothwell, 1984) has been reported. However, the research literature is characterised by contradictions. One contribution comprising 16 cases, including Belgian university spin-offs, provides evidence that access to risk capital does not appear to enhance the likelihood of survival (De Cleyn and Braet, 2009). On the other hand, two theoretical models such as the heterogeneous-agent general equilibrium model have been applied to show that entrepreneurial risk capital can substantially affect both wealth distribution and the macro economy (Luo et al., 2010). Other authors have shown how risk capital boosts technological entrepreneurship (Venkataraman, 2004) through labour markets changes (Kivinen and Ahola, 1999b) or regional transformation.

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Quantitative approach		Qualitative approach	
Descriptive explorations or similar	0	Discussion of cases, interviews or similar	6
More complex analysis such as factor, regressions, etc.	4	Dominant theoretical approach	2
		Conceptual papers or similar	11
Sum of peer-reviewed publications using quantitative methods	4	Sum of peer-reviewed publications using qualitative methods	19

Table 4a: Methods employed in review studies based on the entrepreneur's perspective

With respect to the 11 other conceptual papers in Table 4a addressing the entrepreneur's perspective, the articles by De Clerq et al. (2006) and White et al. (2009) provide the basis for understanding the dynamics of risk capital as a driver of growth (Pandey et al., 2003), highlighting the importance of types of ownership structure (Le Vigoureux, 1997). Teti and Casillo (2013) focus on private equity and enterprise growth in the Italian context, and earlier, Taylor (1955) examined the specific conditions related to risk capital in Puerto Rico. Interestingly, none of the studies based on the entrepreneur's point of view have adopted a mixed-methods approach. Thus, research on international information networks for encouraging both national and international risk capital markets in a global environment deserves more attention. The use mix-methods studies can enhance the communication efficiency between companies, entrepreneurs and investment institutions, taking different perspectives into consideration. This leads to the next section.

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3.2.3 A two-dimensional focus

Entrepreneurial finance for innovative high-risk ventures has been a crucial bottleneck for entrepreneurs. In numerous countries, small and medium-sized enterprises have faced a long-standing shortage of investment finance. In closing the regional risk capital gap, the different roles and perspectives of both risk capital financing partners and entrepreneurs have become increasingly important (Mason and Harrison, 1995; Wetzel Jr, 1981). Several experimental initiatives to enhance both the demand and supply side of entrepreneurial finance have been developed in national and regional settings. Support for cross-border activities in this context from policymakers, entrepreneurs and financing partners can be potentially quite helpful (Boekholt, 1996). For instance, in Canada a successful Business Immigration Program was established for entrepreneurs, the self-employed as well as financial partners. De Rosa (1995) used a variety of qualitative and quantitative methods to assess this program and verify its impact. Apart from a positive economic impact, improved support for entrepreneurs and easier access to risk capital, enhanced academia-business transfer as well as collaboration show that such initiatives are not only necessary but vital (Carayannis and Papadopoulos, 2011; Carayannis et al., 2014; Cheney and Ozawa, 2011; Lerner, 2002). Obviously, the majority of financing partners are frequently confronted with insufficient investment opportunities, which results in considerable uncommitted sums being available for investment. Consequently, the promotion of tailored services to link risk market participants has the potential to play a crucial role in an effective risk capital market as well as in the economy in general (Collewaert, 2012; Mason and Harrison, 1993; Maxwell and Lévesque, 2014).

Quantitative approach		Qualitative approach	
Descriptive explorations or similar	1	Discussion of cases, interviews or similar	2
More complex analysis such as factor, regressions, etc.	0	Dominant theoretical approach	5
		Conceptual papers or similar	6
Sum of peer-reviewed publications using quantitative methods	1	Sum of peer-reviewed publications using qualitative methods	13

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Table 5a: Review articles addressing both perspectives

Table 5a summarises the list of review articles that address both perspectives. While no study with a two-dimensional focus employed classification matrix as a research design, only two case studies discussed and presented both the entrepreneur’s and financial partners’ perspectives as a win-win relationship (Bruno and Tyebjee, 1985; Smida and Youssef, 2006). However, five contributions with a major focus on theoretical models provide a balanced view of the key players in the risk capital market. Landström (1998) in his exploratory study discusses the relationship between market participants and the status and role of financing partners as ‘business creator’ and ‘co-creator’. While his study highlights Swedish decision-making principles related to investment opportunities, Radosevich (1995) presents a multi-faceted model of the entrepreneurial mode for the commercialisation of technology in New Mexico. However, while these authors discuss human risk capital in this sphere (Kivinen and Ahola, 1999a), Smith (1997) studies the risk of uncertain ventures and recommends that entrepreneurs should be better and differently prepared to take on these risks. Once again, Table 5b highlights that in future, studies should explore different perspectives as a fruitful basis for charting a progressive research path.

Method of peer-reviewed articles focusing on both entrepreneur's and financing partners' perspectives		Qualitative approach		
		Discussion of cases, interviews or similar	Dominant theoretical approach	Conceptual papers or similar
Quantitative approach	Descriptive explorations or similar	0	1	0
	More complex analysis such as factor, regressions etc.	0	0	0

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Table 5b: Review articles addressing both perspectives and applying a mix-methods approach

The current two-dimensional setting with two key players having completely different backgrounds, values and objectives requires customised solutions and initiatives, which clearly point to the need for further research, as described in the next section.

4. PROSPECTIVE AVENUES FOR RESEARCH

The primary purpose of this literature review is to identify potential avenues for future research. From our review of 83 peer-reviewed publications, we identified open questions and gaps requiring additional research in the field of risk capital financing. Accordingly, we propose the following three potential future research paths.

First, most of the studies have adopted qualitative approaches with a focus on the perspective of the risk capital financial partners – the entrepreneurial perspective seems to have received less attention. More quantitative analyses and mixed methods research projects are needed to analyse different relationships, analysing performance indicators relevant to both market players (Starr, 2014; Zachariadis et al., 2013). Although earlier contributions such as that by Wetzel Jr (1987) or Harrison and Mason (1992) provide in-depth discussion on the quality and efficiency of risk capital networks, research on international information networks and independent organisations, incorporating both partner and entrepreneurial perspectives, to enhance risk capital markets in a global context are needed.

Next, most of the recent contributions exhibit a geographical concentration or dominating sector in their analyses. For instance, Teti and Casillo (2013) or Belussi and Sedita (2015) focus on Italian cases, while Yazdanfar and Turner (2012) discuss the Swedish perspective and Reddy and Subbaiah (2011) and Mohanan (2006) discuss the Indian scenario. In addition to the regional settings, more cross-sectional contributions, such as that by Duxbury et al. (1996) and international studies such as those conducted by Fischer (1993), Landström (1993), Koryak and Smolarski (2008) Groh et al. (2010b), Groh and Liechtenstein (2011c) or Bernoth and Colavecchio (2014) should contribute to the advancement of the risk capital literature as well as to the dissemination of good practices in business with respect to exploitation issues. As recommended by several scholars (e.g.

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Park, 2004; Wright et al., 2004), multi-country comparison studies will enrich the future body of risk capital research.

Third, more attention should be paid to the entrepreneur's practical concerns in this development, which have not been adequately addressed in the research so far. Programmes on the risk capital market for linking (potential) entrepreneurs and partners need to be explored so that they can serve as the basis for further services to boost the risk capital markets. Studies (e.g. Cheney and Ozawa, 2011; Jääskeläinen et al., 2007) should build a robust starting point for further investigations such as exploring the link between different management and risk levels and the performance indicators for entrepreneurs and partners facing risk capital challenges (Frydrych et al., 2014; García and Lorente, 2014). A better understanding of the requirements of one's counterpart is crucial for entrepreneurial finance in risk capital markets, and it should be taken into account in future cross-border initiatives to boost risk capital markets as well as the economy (Boekholt, 1996).

5. CONCLUSION AND LIMITATIONS

Today risk capital is receiving increasing attention at different levels depending on companies' growth status. To map out the current state of research in this interdisciplinary field, we conducted literature review that comprised 83 peer-reviewed journal articles. The discussions of the different studies in this research discipline shed light on two different perspectives. Without claiming that these are the main avenues in risk capital research, this paper tries to build a bridge between these two directions to present crucial paths in both the present and in future research literature. However, with respect to theoretical backing, this review supports the call for stronger (theoretical) ties between finance and entrepreneurship to promote a better understanding of both dynamics. Our analysis also highlights other drawbacks in the existing body of research, which have been translated into suggestions future research directions.

First of all, this review stresses that contributions applying more quantitative or efficient mixed methods are needed to improve reliability and achieve a better understanding of the relationship between different market participants, with a specific focus on (information) networks (Hohenthal, 2006; Starr, 2014). The theoretical base of such contributions should justify the methodological approach. Moreover, less common

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methods in finance, such as structural equation modelling for different levels of abstraction, perhaps in international case studies, should be considered (Zachariadis et al., 2013). This leads us to the second major outcome of this work. More cross-sectional contributions and international studies will significantly enhance this field of research. Theories from other disciplines could serve as vital input for explaining cross-cultural differences in investment behaviour. Lastly, our recommended research direction also calls for detailed consideration and reflection through in-depth assessments and analyses of programmes dedicated to matching entrepreneurs and risk capital financing partners. These contributions will provide a rewarding basis for developing further services to boost risk capital markets, global entrepreneurship and the economy as a whole.

With respect to the implications of this study, it is worth reiterating the recommendations of DeRosa (1995), who stresses that programmes designed to bring risk capital market participants together have multiple positive impacts other than economic such as improved support for entrepreneurs, the accessibility of risk capital, enhanced academia-business transfer and greater collaboration (Cheney and Ozawa, 2011; Collewaert et al., 2010). Given this suggestion, the present article points out the necessity for future research to identify the relationship between different risk capital market participants as a step towards tailoring services to increase the quality and effectiveness of this relationship and, finally, the chances of success of both key players.

Some limitations of this work must be acknowledged. First, this literature review cannot guarantee that all research work published on risk capital issues was considered. Nevertheless, because of the methodological approach applied, the essential contributions in this research discipline are well represented, and the probability of omission of crucial studies, which could have significantly influenced the results and conclusion, is quite low. Next, the recommendations of the review are dependent on the author's subjective interpretations of the results. While long-term multiple examinations would no doubt decrease this subjectivity, the current review builds a sound foundation for identifying vital research avenues in the field of risk capital.

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