

**VENTURE CAPITAL INTERNATIONALIZATION:
SYNTHESIS AND FUTURE RESEARCH DIRECTIONS**

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ABSTRACT

Research on venture capital internationalization (VC) has expanded rapidly over the last decade. This paper reviews the extant literature on VC internationalization and highlights gaps in our knowledge. We identify three major research streams within this literature, which revolve around the following questions: (1) which VC firms invest across borders and what countries do they target, with a macro-economic or a micro-economic focus; (2) how do VC firms address the liabilities of non-domestic investing; and (3) what are the real effects of international VC investments? We provide an overview of the contributions in these research streams, discuss the role of public policy, and suggest avenues for future research. Specifically, we call for a deeper understanding of: (1) the functioning and impact of VC firms' modes of internationalization; (2) micro level processes such as the functioning and decision making of international investment committees, the interaction between headquarters and local offices, or the development of international human and social capital; (3) the role of country institutions in VC internationalization and its real effects; and (4) the interplay of international VC with alternative financing sources.

Key words: Entrepreneurial finance, Venture capital, Cross-border investment, Foreign direct investment, Internationalization, Review

1. Introduction

Venture capital is a subset of private equity and refers to investments made for the launch, early growth or expansion of companies.¹ Many high profile companies including Apple, Facebook, Spotify, Google, Gilead Sciences, Starbucks, Airbnb, and Uber raised VC funds in their early years to boost their growth. VC firms are financial market intermediaries, specializing in the management of information asymmetries and high levels of uncertainty (Amit et al., 1998; Gompers and Lerner, 2001). They provide capital to companies that otherwise face severe difficulties to attract financing (Gompers and Lerner, 2001; Wright and Robbie, 1998). The companies that VC firms target are typically small and young, often have negative cash flows, operate in new or volatile markets and possess low levels of collateral (Stuart et al., 1999; Vanacker and Manigart, 2010; Ueda, 2004). VC firms generally invest in these high-risk companies by purchasing equity or equity-linked minority stakes, often take an active monitoring and value adding role, and aim for significant capital gains at exit some five to seven years after an initial investment (Gompers and Lerner, 2001).

Due to the need to reduce information asymmetries and related adverse selection and moral hazard problems, VC investing has long been a local industry (Cumming and Dai, 2010; Wright and Robbie, 1998). The geographical proximity to investment targets was deemed necessary to locate and evaluate target companies (Sorenson and Stuart, 2001) and to efficiently provide post-investment monitoring and value adding services (Mäkelä and Maula, 2006). As a consequence, investing in non-domestic companies brings liabilities of foreignness for VC investors (Wright et al., 2005), which are “all additional costs a firm operating in a market overseas incurs that a local firm would not incur” (Zaheer, 1995: 343). Compared to domestic VC investments, international VC investments present additional risks and challenges because

¹ See Drover et al. (2017), Manigart and Wright (2013) and Vanacker and Manigart (2013) for some recent overviews of the general venture capital literature.

of the geographical, cultural and institutional distance between portfolio companies and VC investors increases (Devigne et al., 2016).

Given the benefits of local presence, cross-border VC investments were a negligible fraction of the total VC investment activity prior to the early 1990s (Manigart et al., 2010). The enhanced domestic competition in maturing VC industries has, amongst other factors, increasingly driven VC firms to search for investment opportunities abroad (e.g., Aizenman and Kendall, 2012; Alhorr et al., 2008; Meuleman and Wright, 2011; Tykvová and Schertler, 2011; Vedula and Matusik, 2017). Chemmanur et al. (2016) report that cross-border investment in VC markets increased from 10% of all VC investments in 1991 to 22% in 2008 (based on the number of VC investments). Schertler and Tykvová (2011) report that over the period 2000-2008 cross-border VC deals (i.e., deals with at least one foreign VC) accounted for almost one-third of total VC deals worldwide. It is clear that the number of international VC transactions has become non-negligible.

Early research on VC in an international context has focused on comparing domestic VC behavior between different countries (Sapienza et al., 1996; Manigart et al., 2000, 2002; Bruton et al., 2005). This research stream enables to comprehend the differences between VC markets in different countries but it does not provide insights into the challenges faced by VC firms when entering and managing investments in international markets, which is the focus of this paper. While we do not minimize the importance of the numerous papers that have studied various aspects of VC in general and VC internationalization in specific, this paper reviews three major research streams that we identified in the international VC investment literature. A first research stream assesses the country-level and firm-level determinants of international VC investments and the characteristics of favored target countries. A second stream of research focuses on the strategies international VC investors adopt to mitigate liabilities of foreignness. A third research stream examines the outcomes of international VC investments. We then

discuss the role of public policy and government VC for VC internationalization. Finally, we discuss several general areas for future research on VC internationalization and specific areas for future research in the three major streams of research that we reviewed within this literature.

2. Determinants of International VC Investment Flows

Given the advantages of proximity between VC investors and portfolio companies (Sorenson and Stuart, 2001; Mäkelä and Maula, 2006), a first important question is why VC firms invest across borders. Below, we discuss both country level and VC firm level determinants of international VC flows that have been advanced in the literature.

2.1. Country level determinants

Extant research highlights several country level determinants that impact international flows of VC (e.g., Aizenman and Kendall, 2012; Balcarcel et al., 2010; Guler and Guillén, 2010a; Schertler and Tykvová, 2011; Schertler and Tykvová, 2012). Selected studies in this domain—that have asked the research question why some countries *import* or *export* more VC than others—are summarized in Table 1.

[Insert Table 1 about here]

An important determinant driving the import of international VC is the institutional development of the target country. International VC investors preferably target institutionally developed countries as this creates a more investor-friendly climate with more transparency and fewer information asymmetries between VC owners and their portfolio companies (Aizenman and Kendall, 2012; Balcarcel et al., 2010; Groh et al, 2010; Guler and Guillén, 2010a). VC firms hence invest in target countries characterized by technological, legal, financial, and political institutions that create innovative opportunities, protect investors' rights, facilitate exit,

and guarantee regulatory stability. Further, the local presence of qualified human capital is an important factor to attract international VC flows in countries (Aizenman and Kendall, 2012).

Some country characteristics impact both the import and the export of VC (Groh et al, 2010). Specifically, expected economic growth in the home and target country are important factors. Expected GDP growth in the target country is positively associated with the number of deals financed by both domestic and international investors, while expected GDP growth in the country of origin of the VC investor discourages VC exports (Aizenman and Kendall, 2012; Schertler and Tykvová, 2011). These findings suggest that VC firms with more promising investment opportunities in their home country prefer to invest more intensively at home and less intensively abroad. Furthermore, the size of the stock market is a strong determinant of VC import and export. Active stock markets of the target countries provide exit mechanisms for successful portfolio companies (Groh et al., 2010). A country with an active stock market will not only lead to more domestic deals, it will also attract more foreign investors. Interestingly, VC firms operating in a country with an active stock market will also invest more internationally (Aizenman and Kendall, 2012; Schertler and Tykvová, 2011).

Several studies have also investigated the impact of *differences* between target and investor country characteristics to explain VC flows between these countries. Expected economic growth differences between countries are positively related to a net flow of VC from the low growth to the high growth country (Schertler and Tykvová, 2011). Smaller geographical distance (Colombo et al., 2017), common language, colonial ties (Aizenman and Kendall, 2012) and between-country trust (Bottazzi et al., 2016) increase the flows of VC between countries. When countries' economies become more integrated, as in the European Union, an increase in the amount of international VC investment is likely to follow (Alhorr et al., 2008). Institutional environments hence play an important role on international VC flows.

The presence of strong industry networks between the VC firm's home country and its target country also enhances international VC flows (Madhavan and Iriyama, 2009). Further, “transnational technical communities”, which are groups of immigrants active in both home- and host-country technical networks, positively affect international VC flows: higher professional and technical immigration levels from a target nation to the U.S. predicts higher VC outflows from the U.S. to the target nation (Madhavan and Iriyama, 2009). Hochberg et al. (2010), focusing on distinct local VC markets within the US, show that in more densely networked local VC markets—i.e., markets where network ties among incumbents are strong—there is less entry by outside VCs (Hochberg et al., 2010). Outside VC firms with established ties with local VC firms are able to overcome this barrier to entry, but other local VC firms may react strategically to increased threats of entry and heightened competition by freezing out local firms who facilitate entry (Hochberg et al., 2010). It would be interesting to examine such potential relationships using a cross-country dataset.

2.2. VC firm level determinants

Besides country level determinants, several VC firm level determinants impact individual VC firm's probability to invest in foreign countries. Selected studies in this domain are summarized in Table 2.

[Insert Table 2 about here]

Structural and strategic features of VC firms—such as their investment focus, type, and reputation—impact their probability to invest across borders (Cumming and Dai, 2010; Fritsch and Schilder, 2008; Gupta and Sapienza, 1992). VC investment strategies that require higher resource consumption in the form of stronger monitoring are associated with a narrower geographic scope. This includes acting as lead investor or targeting entrepreneurial ventures with very high information asymmetries such as early stage or technology ventures,. Corporate

VC firms and more reputable VC firms—i.e., older, larger, more experienced and with a stronger IPO track record—exhibit a broader geographic scope (Cumming and Dai, 2010; Gupta and Sapienza, 1992). These VC investors seem better able to reduce information asymmetries associated with distance. In contrast, government-related VC firms have a narrow geographic scope (Bertoni et al., 2015). Finally, VC firms in which investment managers can devote more time to their portfolio companies (i.e. VC firms with more investment executives per portfolio company) also have a broader geographic scope (Fritsch and Schilder, 2008), consistent with larger distance requiring higher time commitments of the VC investors.

A VC firm's human capital (the nature of the experience of its managers) and social capital (its network of syndication partners) strongly determine its internationalization strategy. First, with respect to a VC firms' human capital, the international investment experience of a VC firm's investment managers impacts its geographic scope (De Prijcker et al., 2012; Patzelt et al., 2009; Schertler and Tykvová, 2011, 2012). VC firms with more managers with foreign experience invest more intensively abroad (Schertler and Tykvová, 2011, 2012) because they are more familiar with the institutional and legal environment in foreign countries and have a better access to international networks. Higher proportions of investment managers with international or entrepreneurial experience also lead to a broader geographic investment scope (De Prijcker et al., 2012; Patzelt et al., 2009). Inherited knowledge through prior foreign work experience of VC firm's management outside the focal VC firm also has a positive effect on internationalization (De Prijcker et al., 2012).

Second, a VC firm's social capital also has a major impact on its geographic scope (Cumming and Dai, 2010; Iriyama et al., 2010; Sorenson and Stuart, 2001; Vedula and Matusik, 2017). Social networks in the VC industry—developed through syndication—diffuse information about potential investment opportunities across boundaries, thereby expanding the spatial investment radius of VC investors (Sorenson and Stuart, 2001). Better networked VC

firms hence exhibit less local bias (Cumming and Dai, 2010; Sorenson and Stuart, 2001). Having more, but less intense, international syndicate partners has a stronger positive impact on future international activities than having fewer but more intense partners (De Prijcker et al., 2012). These results show that despite communication technology advances, inherent boundaries around the flow of timely, reliable, fine grained and high-quality information still produce localized patterns of exchange. Better networked VC firms are able to reduce information asymmetries associated with distance through interpersonal social relations with local investors. Interestingly, Vedula and Matusik (2017) show that while foreign syndication partners play a significant role in US VC firms' first internationalization decision social cues from geographically proximal peers have an even stronger impact.

3. Strategies to Compensate for Liabilities of Foreignness

Multiple studies show that portfolio companies differ in the way they are sourced, funded, syndicated and monitored by domestic versus international VC firms (Mäkelä and Maula, 2006).² The increased geographical, cultural and institutional distance that foreign VC firms face, severely limits domestically used strategies to mitigate information asymmetries. In a local context, VC firms manage uncertainty by sourcing favorable investment targets through their entrusted local networks and intensive screening involving face to face meetings (Sorenson and Stuart, 2001). Moreover, VC firms provide their portfolio companies with more than financial resources: after the investment, they provide value adding services and access to other resources (Sapienza et al., 1996; Hsu, 2004). Value adding activities are hindered when investing across borders, because these activities often require proximity and a fine-grained understanding of

² In this review, we focus on VC firm internationalization and how VC firms manage the liabilities related to their own internationalization. It is important to acknowledge that other studies have also focused on the internationalization of VC-backed companies and how VC firms manage the liabilities of internationalization by their portfolio companies (e.g., LiPuma and Park, 2014).

the local environment, especially for early stage portfolio companies (Devigne et al., 2013). As a result, VC firms investing internationally will have to adapt their investment process rather than merely implementing the “recipes” from their domestic markets. For instance, foreign VC firms in India place greater emphasis on product market factors and accountants’ reports than domestic VC firms when selecting investment targets in India (Wright et al., 2002) and they prefer strategic monitoring and advice rather than monitoring of the operational activities because the former is easier to provide across distance (Pruthi et al., 2003).

Table 3 summarizes selected studies that examine how VC investors minimize liabilities of foreignness when investing across borders.

[Insert Table 3 about here]

The first step in the VC cycle is to generate deal flow from which to select promising investment targets. A VC firm can either proactively search for deals (solicited deals) or passively wait for deals approaching (unsolicited deals) through the entrepreneur, the VC firm’s network or an intermediary (Lu and Hwang, 2010). Generating sufficient deal flow is more challenging for VCs operating across borders, as foreign VC firms originate fewer unsolicited deals from their networks compared to domestic VC firms (Lu and Hwang, 2010). In response, international VC firms mainly draw upon their home country advantages by originating more solicited deals from networks (Lu and Hwang, 2010). Moreover, some VC firms’ domestic network advantages, such as their social status advantages, are transferable from the VC firms’ home country to the target company’s country (Guler and Guillén, 2010b), leading to higher deal flow generation for higher status international VC firms.

Selecting the right investment targets among the deals presented is one of the most important drivers of VC success (Sorensen, 2007). When targeting portfolio companies in a foreign country, a higher geographical and cultural distance and a lower embeddedness in the portfolio companies’ environment hampers the transfer of soft information (Devigne et al.,

2016). A strategy used by cross-border VC firms to overcome information problems is therefore to select portfolio companies with lower ex-ante information asymmetries. Foreign VC firms are more likely to invest in more information-transparent portfolio companies, i.e., in a later stage, in a later round or in larger deals (Dai et al., 2012; Schertler and Tykvová, 2011).

When structuring the cross-border investment, deal features and legal contracts may also be used as a tool to mitigate information problems (Balcarcel et al., 2010; Bengtsson and Ravid, 2009; Bottazzi et al., 2009). Cross-border VC investors invest larger amounts in portfolio companies in countries with worse legal protection (Balcarel et al., 2010). This finding suggests that cross-border VC firms mitigate contracting problems in countries with weak legal environments by taking larger equity stakes, which enables them to enforce control rights which courts may not be able to adequately enforce with smaller stakes. Further, when the geographical distance between a VC firm and its portfolio companies increases, investors negotiate contracts which give more high powered incentives to entrepreneurs, such as cash flow contingencies (Bengtsson and Ravid, 2009), thereby more strongly aligning the interests of investors and entrepreneurs. These findings supports the view that distance makes monitoring more difficult and that VC investors try to mitigate this issue through contracting.

Furthermore, VC firms' domestic legal system impacts their behavior abroad. For example, VC firms from common law countries are more prone to use downside protection clauses, not only in their domestic investments but also when investing across borders (Balcarel et al., 2010). Bottazzi and colleagues (2009) further show that more developed legal systems in a VC firm's home country are associated with more VC involvement and the VC investor's legal system is more important than the portfolio company's legal system in determining investor behavior even when investing abroad.

Another way to address problems of information asymmetries, monitoring, and resource transfer is to syndicate with local VC firms as this strategy allows to outsource the monitoring

and value adding functions to local co-investors who are not hindered by geographical, cultural or institutional distance (Mäkelä and Maula, 2008; Devigne et al., 2013; Nahata et al., 2014; Huang et al., 2015; Chemmanur et al., 2016). Additionally, a syndicate comprising both local and international VC investors provides a broader skill set, experience, and networks that may generate additional value to companies (Schertler and Tykvová, 2012; Devigne et al., 2013). Co-investing with domestic VC investors is especially used when entering less institutionally developed countries (Chemmanur et al., 2016; Dai et al., 2012; Guler and Guillén, 2010b; Meuleman and Wright, 2011; Sorenson and Stuart, 2001), although country level uncertainty decreases the likelihood of co-investments with local investors (Liu and Maula, 2016).

Yet, not all cross-border VC firms need local firms to mitigate information and resource transfer problems. Organizational learning, including a VC firm's focal country level experience and its overall multinational experience, reduce its need to rely on local partners over time (Meuleman and Wright, 2011; Liu and Maula, 2016). Further, VC firms with more investment executives per portfolio company learn faster and hence have a lower probability to engage in cross-border syndication (Meuleman and Wright, 2011).

With which domestic VCs do cross-border VCs prefer to syndicate? Cross-border VCs typically prefer domestic VCs with whom they have pre-existing ties. However, high-quality legal frameworks and industry associations facilitate syndication between cross-border and local VCs and diminish the need for cross-border VCs to rely on pre-existing ties (Meuleman et al., 2017).

Finally, the internationalization literature suggests yet another strategy to compensate for liabilities of foreignness, which is to set up a local branch office. This strategy ensures proximity to entrepreneurs, thereby reducing asymmetric information problems (Pruthi et al., 2009). The foreign head office will typically be represented in the branches' investment committee that decides on investments and exits. This strategy allows the foreign head office

to manage challenges that otherwise would require the deployment of expatriates (Pruthi et al., 2009). When employing local investment professionals in the branches, cultural and institutional differences are reduced, thereby further facilitating the transfer of knowledge and advice to companies (De Prijcker et al., 2012; Pruthi et al., 2009; Devigne et al., 2016). In the Chinese context, Huang et al. (2015) find that having a Chinese office made foreign VCs less likely to syndicate with local VC, thereby suggesting that VC firms with a local branch feel they can address liabilities of foreignness by themselves (through the local office). VC firms' decision to open a branch in a foreign region is strongly driven by the success rate of VC investments in that region (Chen et al., 2010). Research on the use of branch offices in the VC industry remains very limited, however.

4. Outcomes of International VC Investments

What matters for both entrepreneurs and VC investors is the development of the portfolio company, which is ultimately associated with the exit of investors. The exit from portfolio companies is the last and perhaps most important step in the VC cycle (Gompers and Lerner, 2001; Wright and Robbie, 1998). First, the exit route determines the VC firms' returns (Ruhnka and Young, 1987). Second, entrepreneurs are highly involved because the exit route not only impacts their financial return but also their future role within the company. Importantly, a successful outcome for the VC investor is not by definition a successful outcome for the entrepreneur. We will hence discuss the outcomes of international VC investments from the perspective of both the portfolio company and the VC investor.

4.1. Outcomes from the perspective of the portfolio company

International VC investors impact their portfolio companies' development differently compared to domestic VC investors. Companies backed by cross-border VC investors only grow more

strongly in the long term (but not in the short term), while companies backed by a syndicate comprising both domestic and cross-border VC investors outperform all other combinations (e.g., domestic VC or cross border VC investors only) in terms of growth in sales, total assets and employment (Devigne et al., 2013). This finding suggests that domestic and cross-border VC investors can play synergistic roles as their portfolio companies grow and thereby require different resources or capabilities over time.

More specifically, foreign VC investors may help their portfolio companies in their internationalization (e.g., Chahine et al., 2018; Cumming et al., 2009b). Foreign VC firms located in a portfolio company's export market can be especially valuable by legitimizing the unknown new company in that market (Mäkelä and Maula, 2005; Mäkelä and Maula, 2006), by playing a greater advisory and monitoring role (Chahine et al., 2018) or by relocating the company into that market (Cumming et al., 2009a). Local VC firms, therefore, may actively help their portfolio companies in attracting cross-border VC investors, especially if portfolio companies seek to internationalize (Mäkelä and Maula, 2008) or require large amounts of specialized VC funds that are not always available in the home country (Vanacker et al., 2014). However, as cross-border investors tend to drive their portfolio companies towards their home markets, the above benefits may turn into disadvantages if portfolio companies' export markets differ from the home markets of the cross-border VC investors (Mäkelä and Maula, 2005).

Moreover, not all portfolio companies develop positively. Mäkelä and Maula (2006) develop a theoretical model which proposes that if a portfolio company's prospects decrease, a cross-border VC firm's commitment will drop more strongly compared to that of a domestic VC investor. Due to their lower embeddedness in the portfolio company's local environment and lower attachment to the entrepreneur, cross-border VC investors have lower attachments to their portfolio companies, thereby easing the abandonment decision (Devigne et al., 2016). This relationship is magnified with greater geographical distance but mitigated by the relative

investment size and the investor's embeddedness in local syndication networks (Mäkelä and Maula, 2006).

In Table 4, we summarize selected studies that have primarily focused on the consequences of international VC investments from the portfolio company's perspective.

[Insert Table 4 about here]

4.2. Outcomes from the perspective of the VC firm

Studies on the investment success of cross-border investors present mixed evidence. On the one hand, controlling for portfolio company quality and VC firm reputation, some studies have shown that cross-border VC firms are less likely than domestic VC firms to have successful exits (Humphery-Jenner and Suchard, 2013; Li et al., 2014). Both institutional and cultural distances decrease the likelihood of a successful exit, although a VC investor's international experience may attenuate the negative effect of institutional distance (Li et al., 2014). This evidence is consistent with liabilities of foreignness inhibiting a successful investment process, hampered by increased information asymmetries and more limited resource transfers (Devigne et al., 2016).

On the other hand, other studies have suggested and shown that cross-border VC investors might bring additional exit opportunities (Bertoni and Groh, 2014). Specifically, controlling for firm performance, investor characteristics and local exit conditions, these studies show that cross-border VC firms have a higher probability of M&A and IPO exit (Cumming et al., 2016), have faster M&A and IPO exits (Eспенlaub et al., 2015), and have higher IPO valuations (Chahine et al., 2018; Cumming et al., 2016). Cumming et al. (2016) do not find a difference between domestic and international VC M&A exit probability, however. The probability of a successful exit is especially higher for an international VC investor when investing in later stage companies (Humphery-Jenner and Suchard, 2013). Moreover, Knill

(2009) shows that international geographical diversification is—on a VC firm portfolio level—the only diversification strategy which has no negative effect on the portfolio company exit performance, in contrast with industry or stage diversification. Nahata et al. (2014) show that the cultural distance between countries of the portfolio company and its lead VC investor positively affects exit success.

The above contradicting findings show that more research is needed to fully understand the relationship between international VC investing and exit outcomes. This relationship might, for example, be affected by macro forces such as the (difference in) institutional contexts of both investor and portfolio company, or micro forces such as VC firm and portfolio company characteristics.

Recent studies stress the benefits of local syndication for exit success of cross-border VC investments (thus, combining local and foreign VCs), particularly for early stage investments (Chemmanur et al., 2016; Cumming and Dai, 2010; Dai et al., 2012; Nahata et al., 2014; Humphery-Jenner and Suchard, 2013; Wang and Wang, 2012). Specifically, portfolio companies with both cross-border and local VC investors are about 5% more likely to exit successfully compared with portfolio companies backed by foreign VC firms only (Dai et al., 2012). Interestingly, while Chemmanur et al. (2016) stress that this positive relationship is only present when investing in emerging countries, Nahata et al. (2014) find this relationship only in developed economies. Chemmanur et al. (2016) show that—in emerging nations and controlling for endogenous participation and syndication by cross-border VC firms—syndicates composed of domestic and cross-border VC firms have more successful exits and higher post-IPO operating performance relative to syndicates of purely domestic VC firms or purely cross-border VC firms. These findings are again consistent with local VC syndication as a powerful tool to overcome liabilities of foreignness. Still, there is also evidence from US VC investors, suggesting that the addition of a domestic partner in their cross-border deals is not associated

with the probability of an IPO exit and is even negatively associated with an M&A exit (Wuebker et al., 2015). Again, more research is needed to clarify these contradictory findings.

The effect of foreign VC firms' human capital on the exit success of their portfolio companies is not well understood yet. While Hursti and Maula (2007) find that the international experience of the VC management team is positively related to exit performance (more foreign IPOs) in developed markets, Wang and Wang (2011) show that there is little correlation between a foreign VC firms' human capital, such as its experience, networks and reputation, and portfolio companies' exit performance in emerging markets. Instead, the domestic entrepreneurs' experience is crucial for exit performance in emerging markets (Wang and Wang, 2011).

Target country characteristics also impact an international VC firm's exit performance. Superior legal rights and law enforcement and better-developed stock markets significantly enhance VC long term exit performance (Nahata et al., 2014). More specifically, foreign VC-backed portfolio companies are more likely to successfully exit through an IPO or an M&A and investment durations are shorter in economically free countries (Wang and Wang, 2012). The legal protection rights of VC firms' country of origin within the VC syndicate of an IPO firm negatively impacts the underpricing of IPOs, which is a sign of higher IPO quality; this negative association is stronger for IPOs involving foreign VC firms (Chahine and Saade, 2011). This finding expands prior research on VC syndication by showing that the shareholders' protection rights of the country of origin of foreign VC syndicate members signal the quality of portfolio companies at IPO.

Surprisingly, cultural distance between the portfolio company's and the lead investor's country positively affects VC success especially in emerging economies: it creates incentives for rigorous ex-ante screening, improving VC performance (Nahata et al., 2014). Additionally, Bottazzi and colleagues (2016) find a negative relationship between trust in a country and exit

performance, especially for IPOs. However, more sophisticated investors are more likely to make low trust investments, and doing so they achieve superior performance (Bottazzi et al., 2016). Lack of trust in a country is hence a hurdle to making VC investments, but cross-border investors who overcome this hurdle tend to do well.

In Table 5, we provide an overview of selected studies from an increasingly rich literature that has primarily examined the consequences of international VC investors from the VC firm's perspective.

[Insert Table 5 about here]

5. Discussion

The increasing occurrence of cross-border investments despite liabilities of foreignness and distance raises the interesting questions of *what* drives these investments, *how* they are managed and *what* their outcomes are. So far, we have reviewed and synthesized the extant literature on these three major research streams of VC internationalization. In this section, we provide a discussion of important methodological challenges that have characterized the broader VC internationalization literature and beyond. We further provide an integration of the diverse theoretical perspectives that have been employed to understand the VC internationalization phenomenon.

5.1. Methodological issues

A first important methodological concern that casts a long shadow over the many reviewed studies is that the receipt of international VC is endogenous (for a similar problem in the broader strategy and entrepreneurial finance literature, see Shaver, 1998 and Eckhardt et al., 2006). Companies do not attract financing from international VC firms at random; rather, they may choose specific investors that are optimal given their characteristics and those of their industries

and may thereby deliberately try to raise international or domestic VC. Moreover, international VC firms themselves do not invest at random; rather, they may choose specific portfolio companies, including those that are of higher quality and thus more likely to succeed. When empirical models do not account for such multistage selection on hard-to-measure or unobservable characteristics, this may potentially lead to misspecified models and incorrect conclusions.

Unfortunately, few of the reviewed papers employ natural experiments or more advanced econometric techniques beyond the Heckman selection approach to disentangle “selection” effects from “treatment” effects or the actual influence of international VC. There are notable exceptions, however, particularly in the more recent literature. For example, Chemmanur et al. (2016) use an Instrumental Variable (IV) approach to account for endogeneity of international VC participation and endogeneity in the syndication choice of international VCs. They also use natural experiments using bilateral air service agreements and terror activities in India. As another example, Cumming et al. (2016) also use an IV approach. Specifically, they first estimate the level of internationalization in syndication and, then, use this predicted value as the new variable of interest in the analysis of the portfolio company’s exit.

A second important concern relates to the secondary data sources that are generally used in the international VC literature and beyond (e.g., Cumming et al., 2009b; Cumming and Johan, 2017). Tables 1 - 5 show a clear dominance of studies that use commercial databases such as Thomson’s VentureXpert and Bureau van Dijk’s Zephyr. These databases have specific issues. For example, there are often a significant number of “undisclosed” investors (Huang et al., 2015). Moreover, investments attributed to the local subsidiary of a foreign VC firm are often considered domestic (Huang et al., 2015). In addition, these databases also give rise to several biases, including a statistical bias due to differences in variable definitions (e.g., the

definition of venture capital is not always consistent across countries) and collection methods (Cumming et al., 2009b) thereby sometimes under-representing specific types of investments such as early-stage and small VC investments, or specific countries. These databases also lack control groups of companies that did not search for (international) VC, or tried to obtain such financing but were unsuccessful (Cumming and Johan, 2017). Previous work has shown that the use of different international datasets can provide different answers to research questions (Cumming et al., 2014), which might explain some of the contradictory findings.

Scholars have addressed these challenges by combining multiple data sources and including research teams from multiple countries. A good example is the VICO database capturing detailed data on companies from seven European countries that raised VC and matched firms that did not raise VC (Bertoni and Martí, 2011). To construct the database multiple data sources have been used, including Thomson ONE (VentureXpert), Zephyr but also national databases. The data was consolidated by a central authority that relied on the data collection efforts and experience from teams in each country. Other scholars have relied on alternative data sources, such as surveys or proprietary data from specific VC firms. But these data sources, obviously, have their own specific shortcomings, including relatively limited response rates or additional selection issues.

5.2. Theoretical integration

Different theoretical lenses have been used to examine VC internationalization (see Tables 1-5) and, more specifically, the three major research streams of VC internationalization that we have reviewed.

Economic theories and institutional theory have been used to explain the international VC phenomenon both at the micro-level (e.g., contract design and investment outcome) and at the macro level (e.g., in explaining international flows of VC). Compared to domestic VC

investors, international VC investors are prone to liabilities of foreignness, induced by increased geographic, legal and cultural distance between international investors and portfolio companies. Liabilities of foreignness increase information asymmetries and make monitoring more costly, thereby increasing agency risks. Unsurprisingly, multiple studies have used agency theory and information asymmetry perspectives to increase our theoretical understanding of how international VC investors can minimize these risks.

VC investors are also confronted with heightened difficulties to provide resources to their portfolio companies, although they may provide more diverse and complementary resources. Consequently, the resource based view of the firm (and related perspectives including social capital theory and the knowledge-based view) has been proposed as an alternative lens to understand the international VC process. Network theory has also received a lot of attention, with (local) syndicate partners being identified as important resource providers enabling to alleviate problems related to access to deal flow, agency risk, information asymmetries and resource access. A VC firm's network of syndicate partners is hence an essential resource, fitting in the resource based view of the firm as well. It enables access to investment targets, broadens the resource base available for a portfolio company and helps the transfer of resources to the portfolio company.

Taken together, scholars have employed diverse theoretical frameworks to gain better insights into the challenges, drivers, strategies, and outcomes of international VC investments. We next discuss the role of public policy as an important and specific type of VC firm, before providing a more in-depth discussion of future research opportunities.

6. Public Policy and VC Internationalization

Governments, both at the national and local level, often try to play an active role in stimulating the development of larger and broader domestic VC markets. They can do so in several ways,

for example, through direct government investment programs or through government programs that foster the formation of partnerships with private VC firms. Several studies provide excellent overviews of the debate if governments have been able to fulfill this role (e.g., Colombo et al., 2016; Cumming, 2011). A key concern, however, is the possibility that private VC may get crowded out by public VC in domestic markets. Government interventions may further reduce cross-border investments by local private VC firms (Cumming, 2011). In this section, we more specifically focus on the potential role of governments in stimulating international VC inflow.

Should governments stimulate investments by cross-border VC firms into their country or region? Our review shows that the empirical evidence on the outcomes of international VC investments is not uniformly positive. Still, recent evidence, taking endogeneity issues into account, suggests that international VC firms, particularly in combination with domestic VC firms, foster firm development, create additional exit opportunities, and create more value at exit (e.g., Bertoni and Groh, 2014; Chahine et al., 2018; Chemmanur et al., 2016; Cumming et al., 2016; Devigne et al., 2013). While these effects are at times more or less statistically and economically significant, even non-effects can be “good news” because governments can pursue to create more active domestic VC markets through fostering international VC flows that do not have detrimental effects for domestic portfolio companies and exit opportunities by domestic VC investors.

Moreover, for companies in particular industries that require considerable amounts of money such as biotech—and that operate in countries with developing VC markets—international VC investments might be crucial to grow into international players. For instance, in the Flemish region in Belgium, investments by international (including UK, US, French and Dutch) VC firms have played a critical role in the development of high growth biotech companies (Vanacker et al., 2014). It is also generally ignored that cross-border VC firms may

not only influence the prospects of local companies and exit opportunities in a direct way; they can also stimulate the professionalization of local VC firms. Such prospects may be particularly important in countries with developing VC markets.

Our review has provided a framework of the mechanisms through which governments can facilitate inflows of international VC (from particular countries). In particular, governments can shape the formal institutional (i.e., regulatory, political and economic) context (Holmes et al., 2016) to foster the inflow of international VC. By stimulating international networks, and international human capital formation, governments may also be influential in shaping the inflow of international VC thereby targeting specific countries that represent, for example, important export markets. Such effects can be realized through their own government-related VC investors or indirectly by providing support (e.g. through a fund of fund investment strategy) to local or foreign independent and other VC investors.

A particular point of concern for policy makers, related to international VC investments in domestic companies, might be that international investors often play an active role in venture relocation (Cumming et al., 2009a) and provide international exit opportunities (Bertoni and Groh, 2014). Policy makers might thereby fear that the best companies leave their home country. This should not necessarily be problematic, however, as long as a domestic presence is ensured or if the outflow of companies is balanced with a comparable inflow of companies. Moreover, limiting cross-border VC flows to minimize the risk that local firms would relocate may turn out to be ineffective. Recent evidence from US data suggests that high-tech entrepreneurs in states with limited VC availability are more likely to relocate their activities to states where VC is particularly abundant (De Prijcker et al., 2018). While this evidence represents within country evidence, there is also anecdotal evidence that entrepreneurs move across borders to increase their odds of raising international VC.

7. Avenues for Future Research

7.1. General Gaps

We have summarized an increasingly rich literature on VC firm internationalization, with a focus on international flows of VC, the international VC investment process and the outcome of international VC investments. Yet, many studies have treated VC firm internationalization as a dummy variable: VC firms have either conducted cross-border investments or not (Cumming et al., 2009b). While this represents an important dimension of VC firm internationalization, several other dimensions have been relatively ignored, such as the internationalization intensity and diversity, the entry mode or the impact of the institutional context.

Studies in international business have also explored other aspects of internationalization, such as its intensity (defined as foreign sales to total sales, which in our context could represent the size of foreign investments relative to total investments) and diversity (defined as the number of countries, sometimes weighted by their geographical and cultural difference from the home country, in which a firm generates sales, which in our context could represent the number of foreign countries in which a VC firm has invested) (Fernhaber et al., 2008; Paeleman et al., 2017).

Relatedly, an important area in international business relates to the entry strategy of firms (Zhao et al., 2004). How do they enter foreign markets: through greenfield investments, acquisitions, joint ventures, or other entry modes? VC firms seeking international expansion face a comparable choice. They may either directly invest from their home country or they may set up a local subsidiary. Many VC firms develop a “hub” strategy, whereby they set up a foreign subsidiary which serves a whole region spanning several countries. For example, many foreign VC firms set up a subsidiary in London with the aim to invest across Continental Europe, or invest in East Asia through a subsidiary in Hong Kong or Singapore. Surprisingly,

VC firms' entry modes of internationalization have been largely neglected in the VC literature. Both the drivers and impact of the internationalization mode should be further examined (Guler and Guillén, 2010a; Pruthi et al., 2003; Wright et al., 2002). A related interesting question is whether there is a life-cycle to these entry modes (Wright et al., 2002). Do VC firms first invest across borders from their headquarters, which is a flexible entry mode that can easily be reversed, and only invest in a local subsidiary at a later stage, for which the investments are larger and more irreversible? Does entry mode depend on the target country?

In addition, while research on VC internationalization is growing rapidly, research on its flip side, namely de-internationalization, is scant. Internationalization moves may fail, leading firms to abandon their international activities and thus de-internationalize. Research focusing on this withdrawing process from international markets is critical as factors that influence the decision to pursue a particular strategic course of action, such as internationalization, and factors that influence the de-commitment from that course of action, such as de-internationalization, are expected to be fundamentally different. Moreover, recent events including Brexit (e.g., Cumming and Zahra, 2016) and the election of U.S. President Trump with his "deglobalization" rhetoric might be additional forces that impact VC de-internationalization. Unfortunately, research on the firm level (e.g., performance of prior international investments) and macro-level (e.g., Brexit) mechanisms that may drive VC investors to abandon their prior internationalization strategies is completely lacking.

Further, the role of the institutional context, both in the home and the recipient country, warrants further scrutiny. For example, the decision of a French VC firm to invest in a Belgian company (with both countries having a rather comparable institutional context) is expected to be fundamentally different from the decision to invest in a US or Chinese company. Some studies have indeed reported important differences between international VC behavior in developed and emerging markets (e.g., Dai et al., 2012). A further analysis of the differences

in VC firm internationalization between developing and developed markets—and different institutional contexts more broadly (Cumming et al., 2017)—provides an interesting area of future research. This is especially interesting, as there is currently an increased tendency of VC investors from developing markets (e.g. China, Russia) to invest in more developed countries. For example, an important question is whether there are differences between emerging VC markets compared to developed markets in structuring and monitoring investments (Wright et al., 2002).

Many studies on VC internationalization decisions have focused on samples of independent VC firms. Still, in many countries, other types of VC investors are active including government VC, corporate VC, and bank-affiliated VC. Bertoni et al. (2015) illustrate that corporate VC investors are 77.4 % more inclined to invest across borders. Governments VC investors, however, are especially specialized in domestic companies. They are 73 % more oriented to invest domestically than the full sample. Nevertheless, research on how internationalization of corporate or bank-related VC investors might be different, for example due to the international scope of their parent company, is lacking. Some studies on the outcomes of international VC investments have controlled for VC investor type. However, these studies do not examine how different types of international investors uniquely behave or influence investments outcomes. This raises important questions for future research. For example, how do syndicates comprising local investors and different types of international VC investors influence outcomes?

We further lack insight into micro level processes in international VC firms. For example, the role of the investment committee in international investment decision-making or the implications of the investment committee's structure and composition for international staffing are still not fully understood (Pruthi et al., 2009). It would also be relevant to investigate in more detail the process of international staffing, especially from the perspective of local

offices (Pruthi et al., 2009). Detailed longitudinal case studies might be very instrumental here, to obtain a detailed insight into these processes.

Finally, another general gap in our understanding of VC firm internationalization is how other sources of entrepreneurial finance might work with VC to enable internationalization. The international VC literature, just like the VC literature in general, is largely segmented by the source of financing (Cumming and Johan, 2017). In other words, VC studies generally exclusively focus on VC but ignore the other sources of financing that companies attract. With the growing importance of ‘new’ sources of financing such as crowdfunding (Cumming and Johan, 2016), business angel groups (Shane, 2008) and Initial Coin Offerings, and with the importance of bank finance for SMEs in some countries (REF), it would be interesting to gain a better understanding of how these other sources of financing influence the behavior of VC investors and their cross-border activities more specifically. In the case of crowdfunding, for example: Do larger local crowdfunding markets compete with local VC firms for deals, and if so does it push local VC firms to invest across borders? Does the visibility provided by crowdfunding campaigns remove some of the barriers encountered by foreign VC firms? Do international investors syndicate with angel investors, who mainly operate locally, but who may be strongly embedded in their region? Does an active bank financing market enhance or discourage international VC investment?

7.2. Current gaps in the determinants of international VC investments

Research provides several areas of future research on country level determinants of international VC flows. Some of the unresolved questions are: Are there temporal variations in the internationalization of the VC industry? For example, the VC industry is cyclical and prone to periodic booms and busts. Could there be differences in global inflow and outflow patterns depending on these cyclical stages (Madhavan and Iriyama, 2009)? Further, while it has been

shown that the development of the stock market matters for VC internationalization, we know very little so far about the potential that the banking sector development might play for VC internationalization. What drives the number of countries in which the VC firm has international investments (De Prijcker et al., 2012)? Do international VC firms find foreign countries more attractive based on the characteristics of the available co-investors to syndicate or on the presence of other home-country VC firms (Guler and Guillén, 2010a)? What is the impact of technical immigration as opposed to overall professional immigration on international VC flows? Such refinements would allow scholars to get closer to the drivers of international entrepreneurship in high-technology domains (Iriyama et al., 2010).

Next to country level determinants, the literature also provides areas of future research on VC firm determinants. Do different VC investors demonstrate different levels of tolerance for risk taking related to a global investment strategy? What are the determinants of such differences, as well as their consequences (Madhavan and Iriyama, 2009)? Finally, country level and firm level determinants will not necessarily operate independently (e.g., Vanacker et al., 2014), which begs the question how country level factors (including formal and informal country level institutions) interact with firm level factors?

7.3. Current gaps in the strategies to compensate for liabilities of foreignness

Although several studies have started to investigate how international VC investors cope with liabilities of foreignness, there remain unanswered research questions. First, analyzing companies that have tried but failed to raise foreign VC would help to understand more accurately the role of local investors in raising foreign VC (Mäkelä and Maula, 2008). Next, are there differences between domestic and international VC firms in screening and valuing potential portfolio companies? More specifically, to what extent do foreign VC firms adapt their approaches to local market conditions? If so, how do they adapt their approaches to deal

with different asymmetric information problems (Pruthi et al., 2003)? Do VC firms, for instance, replicate the network connections present in their home countries in the new markets they enter (Guler and Guillén, 2010b)? Foreign VC firms may also gain external knowledge through domestic syndication partners that have relevant international investment experience or through other network partners, for example, international shareholders or service providers such as lawyers or consultants. To what extent are these other partners substitutes for foreign syndication partners, or do they complement them in different ways (De Prijcker et al., 2012)? Do the technology level of potential investments, the background and experience levels of the VC firm's general partners, and the market for IPOs or other forms of exit available to VC firms impact the investment preferences of VC firms (Gupta and Sapienza, 1992)?

How can mechanisms, such as expatriating staff and hiring local talents effectively overcome hurdles related to information friction and cultural differences in international VC investments (Dai et al., 2012)? In which environments do local executives effectively substitute for local co-investors for internationalizing firms seeking to invest in foreign markets (Pruthi et al., 2009)? Is it possible to make the expertise of key people in the home country available through investment committees (Pruthi et al., 2009)? How can VC firms use a mix of strategies—attracting local partners, working with local VC firms or setting up local branches—in order to deal with the peculiarities of the local environment (Meuleman and Wright, 2011)?

7.4. Current gaps related to the outcomes of international investments

Given the mixed evidence presented before, several important questions on the outcomes of international VC investments require further research attention. What is the relation between distance and the probability of non-rational continuation of commitment to a portfolio company that does not meet the initial prospects (i.e., escalation of commitment) (Mäkelä and Maula, 2006; Devigne et al., 2016)? Is international VC firm's commitment influenced by country-

specific factors other than distance (Mäkelä and Maula, 2006) or by entry mode (Devigne et al., 2016)? Foreign VC firms may help professionalize local entrepreneurial firms given their experience of advising and nurturing portfolio companies in their home countries. Do these local entrepreneurial companies have spill over effects on their peers which are currently not financed by foreign VC firms (Dai et al., 2012)? In the same vein, how does the presence of foreign VC firms, either directly or through a local subsidiary, and their partnership with local VC firms help professionalize local VC firms (Dai et al., 2012)?

Further, can foreign VC firms provide other value-added benefits, such as increased internationalization, even if they are not per se associated with portfolio company success (Humphery-Jenner and Suchard, 2013)? What is the role played by foreign VC firms in portfolio companies after the IPO? Foreign VC firms might provide a better contact with international investors; facilitate the presence of portfolio companies in foreign markets; and they might also provide valuable help in portfolio companies' internationalization process (Chahine and Saade, 2011). Finally, there may be unobserved determinants associated with the relocation of portfolio companies such as tax strategies, the size of VC markets, branch offices in different countries (e.g., Cumming et al., 2009a).

8. Overall Conclusion

Although there has been a recent wave of research on international VC, spurred by the internationalization of the VC industry, many important questions remain unaddressed and warrant further scrutiny. With this paper, we have provided a timely overview of the international VC literature and identified important future research directions. We hope that with this paper we will foster further research on international VC in multiple disciplines (and hopefully also across disciplines) including economics, entrepreneurship, finance, and management.

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Table 1: Selected studies on the country level determinants

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2008 - Alhorr, Moore, & Payne	Securities Data Corporation (SDC) Platinum (Thomson Financial Corporation)	24 EU countries for the period between 1985 and 2002	Institutional theory	When countries' economies become more integrated (i.e., adoption of a common market and a common currency), an increase in the amount of international VC investment made into other member countries follows.
2009 - Madhavan & Iriyama	Thomson VentureXpert, IMF, Statistical Yearbook of the Immigration and Naturalization Service U.S. Department of Justice	VC flows from 1982 to 2002 for all nations that have hosted VC flow from the U.S. as of 2002	Network theory, Social embeddedness perspective	Groups of immigrants active in both the home- and host-country technical networks, significantly affect international VC flows. Professional and technical cumulative immigration levels from a given nation to the U.S. predict VC outflows from the U.S. to that nation.
2010a - Guler & Guillén	Thomson VentureXpert	216 U.S. VC firms potentially investing in 95 countries during the 1990-2002 period	Institutional theory	(1) VC firms invest in host countries characterized by technological, legal, financial, and political institutions that create innovative opportunities, protect investors' rights, facilitate exit, and guarantee regulatory stability, respectively. (2) As VC firms gain more international experience, they are more likely to overcome constraints related to these institutions.
2011 - Schertler & Tykvová	Zephyr	World wide sample of 58,377 VC-portfolio company (PC) links	Institutional theory, Info asymmetry, Macro economics	(1) Expected growth differences between the PC's and VC firm's country are strongly positively related to the number of international deals between the two countries. (2) Expected growth in the VC firm's home country strongly increases the number of domestic deals, while it slightly discourages the number of international deals. (3) A higher market capitalization in the VC firm's home countries leads to more domestic as well as foreign deals. (4) The number of deals financed by foreign investors increases when the expected growth and the market capitalization of the PCs' countries increase.
2012 - Aizenman & Kendall	Thomson VentureXpert	Data on VC investments in / over 100 countries covering three decades		Distance, common language, and colonial ties are significant determinants in directing the international VC and VC flows. Moreover, local high end human capital, better business environments, higher levels of military expenditure, and larger financial markets are important factors that attract international VC.

Table 1 (Continued)

Year - Authors - Journal	Data sources	Sample	Literature/theory base	Key findings
2012 - Schertler & Tykvová	Zephyr	Domestic and international VC investments in 15 European countries, the U.S, and Canada from 2000 to 2008	Two country demand – supply framework	Most economic factors shape gross and net inflows in a similar way. Two target country economic factors drive gross and net international VC inflow differently. Higher expected economic growth leads to higher gross as well as net international VC inflows, while more developed capital markets and more favorable VC environment results in higher gross inflows, but lower net inflows.
2016 - Bottazzi, Da Rin & Hellmann	A survey of 685 VC firms in 15 European countries. Eurostat (trust from the citizens of one country toward the citizens of another country)	107 useable responses on survey	Social capital theory, Discrete choice framework	(1) Trust has a significant effect on the investment decisions of VC firms and on how they structure contracts. (2) Trust among nations significantly affects VC firms' investment decisions. Earlier stage investments require higher trust and syndication is more valuable in low- trust situations, (3) Higher trust investors use more contingent contracts.

Table 2: Selected studies on the VC firm level determinants of international VC investments

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2009 - Patzelt, zu Knyphausen-Aufseß & Fischer	EVCA yearbook of year 2005	TMTs and portfolio strategies of 136 European VC firms	Upper echelon theory	VC firms with higher proportions of TMT members with international or entrepreneurial experience have a broader geographic investment scope.
2010 - Iriyama, Li & Madhavan	Thomson VentureXpert	50,490 region-nation-year pairs (i.e. 51 U.S. states, 90 foreign nations and 11 years from 1995 to 2006)	Network theory	The spread of U.S. international VC investments has a spiky geographical pattern as - driven by the spiky international pattern of human networks - the linkages between certain regions in the U.S. and some foreign countries is exceptionally intense.
2010 - Cumming & Dai	Thomson VentureXpert	Sample of U.S. VC investments: 122,248 VC company round observations, representing 20,875 companies invested by 1,908 VC firms from 1980 - 2009	Info asymmetry	(1) More reputable VC firms (older, larger, more experienced, and with stronger IPO track record) and VC firms with broader networks prefer a broader geographic scope. (2) VC firm specializing in technology industries and using more staging prefer a narrower geographic scope. (3) VC firms prefer a narrower geographic scope when they are the lead VC and when investing alone.
2011 - Schertler & Tykvová	Zephyr	World wide sample of 58,377 VC-PC links	Institutional theory, Info asymmetry, Macro economics	(1) VC firms with more foreign and domestic experience invest more intensely abroad since they are more familiar with the institutional and legal environment in foreign countries and have a better access to international networks. (2) VC firms with extensive domestic experience invest internationally more often since they more easily implement a geographical diversification of their portfolios.
2012 - De Prijcker, Manigart, Wright & De Maeseneire	Hand-collected data, questionnaires, archival data, national and European VC associations, Zephyr	110 VC firms from 5 European countries	Info asymmetry, Agency risk, Network theory	(1) International human capital of VC firms increases the likelihood to operate internationally. (2) VC manager's experience and inherited knowledge have a positive effect on internationalization, but external knowledge has limited impact. (3) Intense international contacts even decrease international activities. (4) Together, these results highlight the importance of VC manager's experience and inherited knowledge to overcome information asymmetries inherent in the internationalization of professional service firms, and of VC firms in particular.

Table 2 (Continued)

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2017 - Vedula & Matusik	Thomson VentureXpert	517 first internationalization decisions from 2,160 US VC firms, representing a sample of 12,654 VC firm-year observations between 1990 and 2012.	Institutional isomorphism	Social cues drive VC firms' first internationalization decisions. A focal VC firm is more likely to internationalize when the number of geographically proximal firms with foreign activities increases. A higher level of foreign investment activity by syndicate partners also positively affects a focal VC firm's first internationalization decision. The economic significance of cues from geographically proximal peers is much larger than cues from syndicate partners.

Table 3: Selected studies on the strategies used to mitigate liabilities of foreignness

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2002 - Wright, Locket & Pruthi	Interviews with VC executives	31 VC firms investing in India	Institutional theory, Info asymmetry	(1) Foreign (mainly U.S.) VC firms in India place significantly greater emphasis on product market factors and accountants' reports than domestic firms in India. (2) They place significantly less emphasis on financial contributions of the PC's management in assessing risk and own due diligence and information from entrepreneurs than do U.S. firms in their domestic market. (3) High levels of employment of Indian nationals afford access to local information networks but foreign firms were also more likely to seek other independent info.
2003 - Pruthi, Wright & Lockett	Asia Pacific Private Equity Bulletin (VC directory), questionnaire, face-to-face interviews	31 interviews (84% of active VC firms in India in year 2000)	Info asymmetry, Agency theory	(1) Cross-border VC firms are more involved on the strategic level and domestic ones on the operational level of steering PCs. (2) Cross-border VC firms prefer strategic monitoring and advice which is easier to guarantee across distance than monitoring of the operational activities.
2008 - Mäkelä & Maula	58 semi-structured interviews, observations and several secondary sources (Thomson VentureXpert, company websites, press releases, newspapers,...)	9 PCs from Finland that have their primary market in foreign nations and were invested by at least one cross-border VC	Grounded theory approach & case study, Institutional theory	Cross-border VC investors preferably invest in companies to which local VC firms have provided operational management advice, introduced local contacts and local market knowledge. The importance of this preparation by local VC firms is mitigated when the entrepreneurs are highly experienced or when the home market is not important for the PC. The domestic VC firms hence have an important signalling value which facilitates cross-border investment and syndication.
2009 - Bottazzi, Da Rin & Hellmann	Survey send to 750 VC firms, Amadeus, Worldscope and Thomson VentureXpert	1,431 investments from 124 VC firms in 17 European countries for the period 1998–2001	Double moral hazard, Institutional theory	The VC firm's home country legal system plays a critical role in their behaviour when investing abroad. Better legal systems are associated with more VC involvement and the VC investor's legal system is more important than the PC's in determining investor behaviour even when investing abroad.
2009 - Pruthi, Wright & Meyer	Questionnaire survey with qualitative interviews	37 International VC firms; 31 non-international VC firms all investing in the UK	Knowledge-based view (exploratory approach)	(1) When foreign VC firms establish a local branch, the recruitment of local executives is more important than the deployment of expatriates. (2) From all suggested motives in literature, the most important reason for expatriation is to transfer knowledge. (3) Investment committees play a key role in the international decision-making process, they allow international VC firms to manage challenges faced by local branches that otherwise would require deployment of expatriates.

Table 3 (Continued)

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2010 - Lu & Hwang	EDB (Economic Development Board), AVCJ (Asia Venture Capital Journal), Survey in 1999	34 VC firms investing in Singapore responded to survey of which 17 are international VC firms	Liabilities of foreignness, Info asymmetry	Due to liabilities of foreignness, foreign VC firms investing in Singapore originate fewer unsolicited deals from their networks compared to domestic VC firms. In response to this drawback, international VC firms mainly draw upon their home country advantages by attempting to originate more solicited deals from networks.
2010b - Guler & Guillén	Thomson VentureXpert database, World Bank, Henisz's (2000) Index of Political Constraints, CEPII geographic distance database	All actual and potential investments of 1,010 U.S. based VC firms active between 1990-2002 in 95 countries	Social network theory, Foreign expansion theory	Home-country network advantages of U.S. VC firms such as social status advantages are transferable from the home country to the target country.
2012 - Dai, Jo & Kassicieh	Thomson VentureXpert database, SDC Platinum M&As, Global New Issues Database	2,860 PCs receiving 4,254 rounds of VC financing by 468 VC firms in Asia from 1996-2006	Info asymmetry	In the Asian VC markets, when investing alone, foreign VC firms are more likely to invest in more information-transparent (later stage, later round) PCs. Partnership with domestic VC firms helps alleviate information asymmetry and monitoring problem and has positive implication for the exit performance of local entrepreneurial firms.
2015 - Huang, Kenney & Patton	Thomson VentureXpert	1,095 Chinese PCs, which received 3,365 foreign investments and 696 Chinese investments between 1992 and 2012	Learning perspective	Surprisingly, foreign VC firms are more likely to choose Chinese investors in later rounds and in more mature portfolio companies. Having a Chinese office made foreign VCs less likely to co-invest.

Table 4: Selected studies on outcomes from the perspective of the portfolio company (PC)

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2005 - Mäkelä & Maula	58 semi-structured interviews, observations and several secondary sources (Thomson VentureXpert, company websites, press releases, newspapers,...)	9 PCs from Finland that have their primary market in foreign nations and were invested by at least one cross-border VC firm	Grounded theory approach, Case studies, Institutional theory	Foreign VC firms located in a PC's target market of internationalization can be valuable for the venture by legitimizing the unknown new PC in that market. However, foreign investors tend to drive PC towards their home markets, and the benefits may turn into disadvantages if the target market differs from the home markets of the foreign investors.
2006 - Mäkelä & Maula	58 semi-structured interviews, observations and several secondary sources (Thomson VentureXpert, company websites, press releases, newspapers,...)	8 PCs from Finland that were invested by at least one domestic and one cross-border VC firm	Grounded theory approach, Case studies, Commitment theory	Changes in a PC's prospects influence the VC firm's commitment. This relationship magnified by the VC firm's geographical distance and mitigated by the relative investment size and the investor's embeddedness in local syndication networks.
2009 - Cumming, Fleming & Schwienbacher	Hand collected dataset from VC firms operating in the Asia-Pacific region using Asian Venture Capital Journal's Annual Guides; Asian Venture Capital Journal, Australian Venture Capital Journal, and Thomson VentureXpert	53 VC funds involving 468 PCs in 12 countries in Asia-Pacific region from 1989-2001	Institutional theory	(1) Relocations to the U.S. are motivated by economic conditions as well as an improvement in the laws of the country in which the entrepreneurial company is based. (2) Relocations to the U.S. yield much greater returns to Asia-Pacific VC firms than investing in companies already based in the U.S. at the time of VC investment. (3) More experienced Asia-Pacific VC firms have greater success with their PC relocations to the U.S., and these relocations yield higher returns relative to staying in their country of origin.
2013 - Devigne, Vanacker, Manigart & Paeleman	VICO dataset, including Thomson ONE, Zephyr, PATSTAT, country specific databases, press releases, press clippings and websites.	761 European VC backed companies	Resource based view	Companies initially backed by domestic VC investors exhibit higher growth in the short term compared to companies backed by cross-border investors. In contrast, companies initially backed by cross-border VC investors exhibit higher growth in the medium term. Finally, companies that are initially funded by a syndicate comprising both domestic and cross-border VC investors exhibit the highest growth. Overall, this study provides a more fine-grained understanding of the role that domestic and cross-border VC investors can play as their PCs grow and thereby require different resources or capabilities over time

Table 4 (Continued)

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2016 - Devigne, Manigart & Wright	VICO dataset, including Thomson ONE, Zephyr, PATSTAT, country specific databases, press releases, press clippings and websites.	Longitudinal data on 1,618 unique VC investment rounds in European firms by 1,060 different VC firms. The unit of analysis is the investment decision of each single VC firm in a portfolio company. The data set includes 3,445 investment decisions: 2,399 by domestic VC investors, 568 by cross-border VC investors, and 255 by branch VC investors.	Escalation of commitment	Domestic VC firms have a high tendency to escalate their commitment to a failing course of action. Cross-border VC investors, however, terminate their investments efficiently, even when investing through a local branch.

Table 5: Selected studies on outcomes from the perspective of the VC firm

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2007 - Hursti & Maula	SDC Platinum New Issues Database, IPO prospectuses (from Pioneer database of perfect information Ltd.), Datastream	2,862 IPOs made by EU VC firms between 1991 -2001 (of which 163 are foreign IPOs)	Institutional theory	Pre-IPO ownership by cross-border VC investors is positively related to foreign IPOs.
2009 - Knill	Galante's Venture Capital and Private Equity Directory and Thomson Financial's SDC Platinum	Investment preferences of the 500 largest U.S. VC and PE firms + information on PC from Thomson Financial's SDC Platinum	Portfolio theory	Compared to industry, stage and domestic geographical diversification, international geographical diversification is the only diversification strategy which has no negative impact on the PC's exit performance. As such, it is possible that VC firms can use this form of diversification to reduce risk and potentially grow their VC firm without impacting the PC exit performance.
2011 - Chahine & Saade	Securities Data Company (SDC) database	410 randomly selected U.S. VC backed IPOs from 1997-2007 (represents 30.5% of all VC backed IPOs)	Institutional theory, Agency theory	(1) U.S. IPOs' underpricing is negatively related to the weighted average legal protection rights' index of VC firms' country of origin within the VC syndicate of an IPO firm. This negative association is stronger for IPOs involving foreign VC firms. (2) Legal protection rights of foreign VC firms and board independence of IPO firms play a complementary role in reducing underpricing. This suggests that foreign VC firms from countries with a higher legal protection rights are likely to invest in PCs with better governance, and this reduces underpricing. (3) Results are robust when controlling for selection bias of IPO firms by foreign VC firms. (4) Evidence of a positive effect of the legal protection rights of VC firms on the long-term performance of their PCs.
2011 - Wang & Wang	Zero2IPO, Thomson VentureXpert	495 VC investments between 1999 and 2006 by 84 foreign VC firms in 243 Chinese domestic companies	Institutional theory	(1) Foreign VC firms' human capital (experience, networks and reputation) is not correlated with VC performance. (2) Domestic entrepreneurs' experience is crucial to VC performance.

Table 5 (Continued)

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2012 - Wang & Wang	Thomson VentureXpert	10,205 cross-border VC investments by 1,906 foreign VC firms in 6,535 PCs from 35 countries between 1995-2005	Economic theory, Institutional theory	(1) PC country's economic freedom plays a crucial role in determining cross-border VC performance. In more economically free countries, foreign VC-backed PCs are more likely to be successfully exited (IPO or an M&A), and investment durations are shorter. (2) Cross-border VC performance is also strongly associated to other PC country characteristics. The GDP per capita is negatively correlated to the probability and hazard of a successful exit, legality is positively related to cross-border VC performance and the PC country's entrepreneurial activity is positively related to the probability of a successful exit. (3) PC quality and local VC firms' participation have a positive impact, while early stage investments and VC firms' portfolio size have a negative impact, on the likelihood of a successful exit.
2012 - Dai, Jo & Kassicieh	Thomson VentureXpert database, SDC Platinum M&As, Global New Issues Database	2,860 PCs receiving 4,254 rounds of VC financing by 468 VC firms in Asia from 1996-2006	Info asymmetry	Partnership with domestic VC firms has positive implication for the exit performance of local PCs. Specifically, PCs with both foreign and local VC partnership are about 5% more likely to successfully exit.
2013 - Humphery-Jenner & Suchard	ChinaVenture	4,753 Chinese / Hong Kong portfolio companies that received capital between 1988-2011	Networking theory, Info asymmetry, Portfolio theory	(1) The presence of a foreign VC firm by itself does not per se increase the probability of a successful exit. (2) Syndication with local VC firms increases the probability of a successful exit for foreign VC firms. (3) If a foreign VC successfully exits an investment, then, compared with a domestic VC, it prefers to exit via a M&A or a secondary-buyout as opposed to through an IPO. This reflects the significant lock-up periods associated with VC-backed IPOs in China and the difficulty of achieving a foreign listing on Chinese stock markets. (4) The impact of foreign VC firms on performance depends both on the characteristics of the investment as of the VC firm, it is higher when investing in later stage PCs and when the VC is diversified across industries.

Table 5 (Continued)

Year - Authors	Data sources	Sample	Literature/theory base	Key findings
2014 - Nahata, Hazarika & Tandon	Thomson VentureXpert, SDC Platinum M&As, Global New Issues Database	9,153 PCs from 32 countries (North America is excluded) invested between 1996 and 2002	Info asymmetry	(1) Superior legal rights (and enforcement) and better-developed stock markets enhance VC performance. (2) Cultural distance between countries of the PC and its lead investor positively affects VC success. (3) Cultural differences create incentives for rigorous ex-ante screening, improving VC performance, particularly in emerging economies.
2014 - Bertoni & Groh	VICO dataset, including Thomson ONE, Zephyr, PATSTAT, country specific databases, press releases, press clippings and websites.	422 firms from 7 European countries and 1,062 VC investments, including 190 cross-border investments	Socio-economic and institutional perspectives	Trade sale exits are facilitated by the additional size of the M&A market in the international VC firm's home market. The effect for IPOs is weaker; the IPO volume of the international VC firm's home market is only significant in some specifications. Finally, syndicates with cross-border investors exit underperforming PCs earlier.
2016 - Chemmanur, Hull & Krishnan	Thomson VentureXpert	30,071 VC backed companies from 41 countries between 1989-2008	Institutional theory, Syndication	Controlling for potential endogeneity concerns, PCs (particularly in emerging countries) backed by syndicates composed of international and domestic VC firms have more successful exits and higher post-IPO operating performance than those backed by syndicates of purely international or purely local VC firms.
2016 - Cumming, Knill & Syvrud	SDC Platinum's VentureXpert, M&A and Global New Issues database	67,635 PC/VC investment observations for 31,942 unique PCs, which represents 81 PC domicile nations and 36 VC domicile nations.	Liabilities of foreignness, resources, networks	Syndicates with a cross-border investor base have a higher probability of exiting via an initial public offering (IPO) and higher IPO proceeds. The benefits of cross-border investors in M&A exits are less pronounced.
2018 - Chahine, Saade & Goergen	Thomson Financial Securities Data Company (SDC), VentureXpert, Datastream, company websites, IPO prospectus, and LinkedIn.	1,086 VC-backed US IPOs from 1995 to 2011.	Liabilities of foreignness	Mixed syndicates including domestic and foreign VC firms certify the quality of PCs at the time of the IPO, thereby increasing their IPO premium. Foreign VC firms also play an advisory role (thereby increasing foreign business activities of their US investees) and a monitoring role when the investee's foreign activities originate from the foreign VC's market.