Cross-border investments and venture capital exits in Europe

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Abstract:
We examine how the exit mode (i.e., initial public offering - IPO, trade sale, or write-off) of venture capital investments is influenced by additional exit opportunities brought by cross-border investors. We perform our analyses on a sample of 1,062 financing rounds in 462 high-tech start-ups in 7 European countries. Our findings indicate that, controlling for firm performance, investor characteristics, and local exit conditions, the probability of exiting via trade sale increases with the additional set of M&A opportunities brought by cross-border investors. A similar effect, but with weaker statistical significance, is detected for IPO exits. We reveal that cross-border investors may, at least partially, compensate for insufficient local exit possibilities. They can spillover the capital market activity of their home country and enhance exit options for young ventures. International syndicates are also quicker to write-off their non-performing investments. Hence, international syndication improves the proficiency of entrepreneurial finance relationships.

JEL Codes: G24, G32, G34

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INTRODUCTION

Venture capital (VC) investors are increasingly investing across their national borders (Bottazzi et al., 2004). This trend is particularly surprising given that VC investors, like all cross-border investors, not only have to overcome the liability of foreignness, but also have to cope with the liability of distance (Bruton et al., 2005), which derives from the fact that physically proximate companies can be more easily monitored and more effectively supported in their development (Cumming and Dai, 2010). The liability of both foreignness and of distance can be reduced by syndicating with local partners, which is very common in cross-border VC investments (Meuleman and Wright, 2011). However, local partners will be willing to do so only to the extent to which they perceive some additional value in the international dimension of the syndicate.

The literature has proposed several reasons why internationality in VC syndicates may be an advantage. Cross-border VC investors may complement the value-adding activities of local VC investors by providing knowledge of foreign markets and contacts with customers, suppliers and key executives abroad (Mäkelä and Maula, 2005). Moreover, international governance may be a signal of a venture's ability to become a global player. Empirical evidence supports the notion that international syndicates boost the growth of their portfolio companies (Devigne, Vanacker, et al., 2013) and are more likely to successfully exit their investment (Chemmanur et al., 2013).

In this paper, we argue that there is an additional dimension that may make international VC governance desirable: the fact that international investors enhance the set of exit opportunities. Exit is a fundamental step of the VC cycle (Gompers and Lerner, 1999): whether an investment is successful or not for a VC investor depends crucially on the timing and proceeds of the exit. Exit is so important that it is already planned prior to closing the first financing round (Cumming

and Johan, 2008). As a result, the availability of exit alternatives determines the attractiveness of an investment opportunity. Divesting is more difficult, and less likely to be successful, in countries with illiquid capital markets, which hinder the development of a vibrant local venture capital industry in the first place (Jeng and Wells, 2000). In this paper, we argue that the presence of cross-border investors in a VC syndicate may open up additional non-local exit options, thus facilitating divestment. This benefits all shareholders of the venture: the entrepreneur, local, and foreign VC investors.

We empirically verify this hypothesis using a sample of 1,062 VC investments in 462 European young high-tech companies, which received their first round of financing between 1994 and 2004. Of these investments, 872 were conducted by local VC firms and 190 were cross-border. We apply continuous and discrete-time competing-risks regressions, controlling for firm and investor-specific characteristics, which reveal several important insights.

First, we replicate prior research results and confirm the importance of local conditions. In general, the chances of any exit (successful or unsuccessful) and timing to exit are determined by the liquidity of the IPO and M&A markets, and by the quality of legal rights in the venture's home country.

Second, we show that international syndication provides access to foreign M&A markets. The likelihood of a trade sale and the time to exit not only depend on the state of the local M&A market in the country of the investee, but also on the M&A market liquidity in the countries of the cross-border investors. Essentially, the presence of foreign investors increases the size of the exitable market.

Third, we provide evidence, albeit with limited statistical robustness, that international syndication also has a positive impact on IPO prospects. The results are not as strong as for trade

sales, but suggest that international investors can improve IPO chances by granting access to their home capital market. We interpret the limited significance of our findings on IPOs as a consequence of the fact that, despite their growing importance, foreign IPOs remain such a rare phenomenon (Hursti and Maula, 2007) that the impact of international VC syndicates on the likelihood of going public is difficult to detect.

Fourth, the likelihood of exiting a non-successful venture by means of a write-off or share buy-back[i] increases, and the time until this event decreases, with the presence of foreign investors. This result, in line with evidence by Devigne, Manigart, et al. (2013), supports the idea that international syndication puts more emphasis on professionalism and that unsuccessful transactions are abandoned more quickly. Legal rights in the investee's country are important for winding-up start-ups, and we find that the process is quicker in countries with higher quality legal systems.

We control for a number of determinants of exit mode which could act as confounding factors, such as the size of the syndicate, or the size and the commercial and technological success of the company. The results, controlling for these characteristics, are consistent with our expectations. The likelihood and speed of an exit by IPO increase with the size of the investee and the syndicate, while the likelihood of a write-off decreases. Similarly, commercial success increases the chance and speed of going public and lowers the likelihood of write-off. Technological success also reduces the probability of liquidating the investment. Overall, this confirms the notion that IPOs are the exit channel for the most successful ventures. More importantly, by including syndicate size and firm operating performance in our analyses, we are able to control for potential endogeneity. Syndicate size is typically a signal of firm quality (Meuleman et al., 2009), and thus by controlling for it, we partially correct for unobserved heterogeneity.

Furthermore, international syndicates may indirectly affect the exit mode by affecting firm performance (Devigne, Vanacker, et al., 2013). Controlling for the commercial and technological performance of investee firms allows us to rule out this alternative explanation.

Finally, to verify that our results are robust to potentially endogenous selection, we replicate our analysis on a sample constructed via propensity score matching (see, e.g., Dai et al. 2012). We match each cross-border VC deal with the five local investments that have the closest propensity score, and estimate the competing risks model on the restricted sample. We arrive at the same results, indicating that they are not driven by endogenous selection.

Our paper reveals that international VC governance improves the exit perspectives and accelerates the abandonment of unsuccessful ventures. This increases the efficiency of resource allocation to start-up firms. Entrepreneurs can directly benefit from international syndication because it increases the likelihood of cashing-out their individual share of the returns. Moreover, since international syndicates are less likely to escalate commitment in unsuccessful ventures, they direct entrepreneurial effort away from projects that are unlikely to be successful.

The rest of our paper is organized as follows. In the next section we present the literature related to our study, illustrate the contribution of our paper and develop our research hypotheses. In the following section, we describe the data and methodology. We then report the results of our econometric analysis. Finally, we summarize and conclude.

LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

A number of seminal papers have dealt with the socio-economic frameworks that facilitate VC investment. Black and Gilson (1998) elaborate on the impact of stock market-centered versus bank-centered capital markets on VC activity. They note that only well-developed stock markets allow venture capitalists to exit via IPOs. IPOs are crucial for them because only successful

divestments compensate for the risks of early-stage financing. Bank-centered capital markets also show less ability to produce an efficient deal-supporting infrastructure. Jeng and Wells (2000) find that IPO cycles are one of the major driving forces of VC activity, because they directly determine the returns of VC funds. However, it is not only stock market conditions that affect the success of VC transactions: Cumming et al. (2006) stress the quality of a country's legal system as an even stronger driver of VC returns than the state of development of a country's stock market. Cumming et al. (2010) add to this and show that differences in legality strongly affect the governance mechanisms of VC investments, and hence contribute to their success.

All of these seminal contributions take the perspective of the investee firm rather than that of the investor. Investors often act jointly in syndicated deals and some of the partners may be foreign. From the early FDI literature (Dunning, 1977; Findlay, 1978) we know that foreign investors can spillover resources, access to finance, or managerial and technological know-how to investees. As also suggested by Mäkelä and Maula (2005), we expect similar effects in VC transactions where foreign investors participate either by stand-alone or syndicated investments. In particular, we focus on spillovers from the access to the local capital markets of foreign investors. Our work contributes to the literature on cross-border investment in entrepreneurial finance and the determinants of the potential exit.

In research closely related to our present study, Giot and Schwienbacher (2007) examine exit options of VC-backed firms in the US. The authors focus on the way in which exit conditions evolve after several financing rounds and reveal that IPO candidates are selected very quickly. In contrast, trade sales happen later. Additionally, the achievement of milestones increases the exit speed for all potential exit channels. Similarly to our present results, Giot and Schwienbacher

(2007) find that syndication and local stock market conditions have a positive impact on IPOs. However, as they focus on the US only, they do not examine the effect of foreign syndication partners.

Cumming (2008) examines individual VC contracts and their effect on the exit channel. He finds that strong control rights of the VC firm, for example the right to replace a CEO, favor trade sales. He also shows that write-offs are facilitated in countries with higher quality legal systems. However, he focuses on the local environment of the investee firms and does not take into account foreign investor spillover effects.

Dai et al. (2012) investigate investment behavior and exit characteristics of cross-border VC transactions in Asia. They find that foreign investors bring additional experience to the market, although they face disadvantages with respect to information collection and monitoring as a result of geographic and cultural distance. Syndication with local partners alleviates these disadvantages and has positive effects on exit performance. The authors demonstrate that local stock market development and legal quality in the investee country attract foreign VC investors. However, they do not elaborate on the effect of the investors' home market conditions on exit success.

Chemmanur et al. (2013) analyze the effect of international syndication, specifically focusing on investments in emerging countries. They consider IPO as the only successful exit channel and, in contrast to our study, do not separately consider the more important (with respect to number and volume of transactions) trade-sale divestment channel. They find that syndicates between local and international investors have the highest likelihood of IPO. The probability of success decreases as the distance between the international investor and the venture increases. They

explain this result in terms of the difficulty of monitoring the investment, and the deficiencies in local knowledge that international venture capitalists can face in emerging countries.

Devigne, Vanacker, et al. (2013) reach a similar conclusion, focusing on the growth of European portfolio companies. They regress measures of the operational success of young ventures (such as sales, total assets and wages) on dummy variables that describe the investment syndicate composition, and on several control parameters. The authors reveal that the fastest growing companies are backed by mixed syndicates comprising both domestic and cross-border investors. Nevertheless, they do not incorporate the exit dynamics of the transactions in their analyses.

Jääskeläinen and Maula (2013) focus on network distances of internationally syndicated deals. They show that a venture that has more non-domestic network ties is more likely to exit in a foreign market. However, their key variables are based on cultural differences and on the effect of information distribution based on direct and indirect connections, and not on the characteristics of particular exit markets, which are the main parameters in our model.

Cumming and Dai (2010), report that the local portfolio bias is larger for less-reputable and less-experienced VC funds. Distance from the investee firm negatively affects the probability of successful exit. However, syndication with local partners increases the IPO or M&A chances. The authors note that while their study includes US transactions by US investors only, future research should analyze cross-border deals to enhance knowledge of international syndication.

Hursti and Maula (2007) focus on the factors affecting foreign IPOs by European companies. They find evidence that firms backed by an international syndicate of VC investors are more likely to go public on a foreign exchange. However, they also argue that foreign IPOs remain a rare event, which suggests that even if the likelihood is higher for ventures with foreign VC

participation, they might still be too rare to be economically relevant (and statistically detectable) when other, more common, exit options are also considered. This is also shown in our study.

Hain and Cumming (2012) develop a socio-economic theory for cross-border investments and support their model with data on international transactions from 17 OECD countries. However, their paper elaborates on the motivation for investing abroad caused by international socio-economic differences and not on the resulting impact on the investees. Similarly, Mäkelä and Maula (2008) build a model based on the role of a domestic VC fund in attracting foreign investors. Likewise, their model does not disentangle the value contribution of a cross-border investor.

To summarize, our approach is unique in its focus on all of the important exit possibilities of venture-backed firms, contingent on these firms' economic and technological success. Unlike other studies, we directly verify the source of improvement in exit conditions caused by the presence of an international investor. In particular, we develop two hypotheses regarding spillover effects of cross-border investors. The first relates to IPO exits. It has been shown in the above-cited literature that local stock market conditions are important for successful IPOs. However, a foreign investor might improve the IPO chances by granting access to an additional capital market. We therefore formulate the following hypothesis:

H1: Foreign investors' IPO market liquidity affects the likelihood of an IPO exit.

Similar to IPO exits, we also expect a foreign investor to have a positive effect with respect to trade sales. We in fact assume that the effect is more pronounced because IPOs only take place with the most promising and largest investees. The number of potential IPO candidates is therefore limited. A trade sale provides a much more flexible exit channel in terms of the size and performance of the investee. Dai et al. (2012) stress that trade sales take place in very

successful ventures, but also in ventures close to failure, for example in fire sales. Likewise the size of the investees may vary substantially. This supports our idea that compared to IPOs, successful trade-sale exits are more strongly dependent on the local activities and networks of VC firms. A foreign VC firm should also be able to spillover its access to its local M&A market. The likelihood of a trade sale therefore increases if the M&A market of the foreign investor is strong. Hence, we formulate the following hypothesis:

H2: Foreign investors contribute additional M&A market liquidity and increase the likelihood of trade-sale exits.

DATA AND METHODOLOGY

Sample

Our sample of transactions is extracted from the VICO dataset, which was developed by nine European Universities and research centers through a project funded by the European Commission within the 7th Framework Program. The VICO dataset includes information about 759 VC-backed companies in seven European countries (Belgium, Finland, France, Germany, Italy, Spain, and the United Kingdom). The VC-backed companies were identified by dedicated teams in each country using a variety of commercial and proprietary sources including: VentureXpert (now: ThomsonOne), the Library House (now: Venture Source), Zephyr, VCPro-Database, BVK Directory, WebCapitalRiesgo, RITA, the directories of local VC associations, and investors' websites. Information collected by country-level teams was then checked for reliability and consistency by a centralized data administration unit. All VC-backed firms included in the dataset are young (i.e., founded after 1994), operate in a high-tech industry, and

were independent at foundation (i.e., subsidiaries and local branches of multinational companies are excluded).[ii]

From the VICO dataset, we select all VC-backed companies operating in the following industries: Biotech & Pharmaceuticals, ICT manufacturing, Internet, Software, and Telecommunication (TLC). We retain all companies for which we have complete information about the exit status, time and mode of exit. Exit information is available up to the end of 2010. This leaves us with a sample of 422 companies, and 1,062 VC investments.[iii]

The distribution of companies and investments across industries and countries is illustrated in Panel A of Table 1. The most represented industry in our sample is Software, which accounts for 37.01% of the VC-backed companies and 33.71% of investments. The second largest industry in our sample is Biotech & Pharmaceuticals, which represents 21.43% of VC-backed companies and 27.97% of investments. The largest investee home country is the United Kingdom, where 26.41% of our sample companies are based and 28.91% of VC investments are conducted.

The distributions of companies and investments reflect differences in the relative number of investors per investee across different industry sectors. Table 1, for instance, suggests that on average, more investors are involved in a Biotech & Pharmaceuticals company than in other industries in our sample. This evidence is consistent with the high costs of innovation in Biotech & Pharmaceuticals (Di Masi et al., 1991; Di Masi and Grabowsk, 2007), which may require larger syndicates of investors (Lerner, 1994). We also observe some differences in the number of investors per company across countries, with investors having a more pronounced tendency to syndicate in the United Kingdom, and a lower-than-average tendency to syndicate in Italy and Spain.

Panel B of Table 1 shows that 82.1% of the investments in our sample are conducted by a local investor, with cross-border investments represent the remaining 17.9%, a figure consistent with the evidence provided by Bottazzi et al. (2004). Of the 190 cross-border transactions in our sample, 96 are from VC investors in continental Europe, 54 from investors in the USA, and 26 from investors in the UK. We also have 14 investments from Asia (mainly Japan) and Australia. Most cross-border investments (168 or 88.2%) are syndicated with local partners. This is in line with studies on the behavior of cross-border VC investors (Meuleman and Wright, 2011). Within this population, 121 (63.7%) investments are conducted by independent VC investors and 69 by captive VC investors (including corporate VC, bank-affiliated VC and, in 2 cases, governmental VC funds).[iv]

[Table 1 here]

Table 2 presents the distribution of our sample investments by exit mode. It shows that 655 (61.7%) ventures were divested by the end of 2010. In 124 cases (11.7%) exit was via IPO, in 221 cases the exit channel was a trade sale, in 24 transactions entrepreneurs bought back the VC shares, and for 286 investments the VC funds wrote-off their exposure. The fraction of exited relative to not-yet-exited ventures is higher for cross-border deals (74.7%) than for local transactions (58.8%). This difference is due to a higher incidence of both IPOs (22.1% for cross-border, 9.4% for local deals) and liquidations (31.6% for cross-border, 25.9% for local deals). These differences suggest that while, on the one hand, cross-border investors may on average be involved in more successful companies (Chemmanur et al., 2013), they are also less prepared to escalate their commitment when firm performance is unsatisfactory, and instead write-off their

exposure (Devigne, Manigart, et al., 2013). Exit mode also seems to vary across industries. IPOs are more frequent in ICT manufacturing (21.4%) and Biotech and Pharmaceuticals (19.2%), but relatively uncommon in TLC (6.45%) and, especially, Software (0.84%) where trade sales are most usual (25.4%).

[Table 2 here]

Methodology

In order to study the way in which cross-border exit conditions influence the exit mode of VC investments, we make use of parametric and semi-parametric econometric approaches. Overall, we distinguish between three alternative modes of exit: IPO, trade sale, and liquidation (which includes write-offs and buybacks).[v] We estimate regression coefficients from competing risks models where the covariates determine the likelihood of, and the expected time until, one of these events.

Fine and Gray (1999) Competing Risks Model. First, we use the semi-parametric competing-risks regression model developed by Fine and Gray (1999). Competing risks models solve two methodological concerns in the analysis of VC exits. The first is right-censoring, which is typical of survival models. When analyzing the exit of VC investments, researchers inevitably face the problem of investments which are not yet exited at the time the data are collected (in our case, the end of 2010). Survival models are typically adopted to address this issue. These models aim to estimate the survival function, which is the probability that an absorbing-state event (in our case the exit) does not occur before a given time. The survival function is typically computed from the estimated hazard rate, which is the probability that, at a given time, the absorbing-state

event occurs, not having yet occurred. The hazard rate is, in turn, typically assumed to depend on a baseline hazard which is a function of the time-at-risk, and on a series of observable characteristics. The baseline hazard may be assumed to belong to a specific class of functions (e.g., Exponential, Weibull, Gamma) or be estimated semi-parametrically as in the model developed by Cox (1972).

The second issue which competing risks models address is that for each investment, there are three alternative exit modes. Since the exit modes are mutually exclusive, an investment is no longer "at-risk" with respect to a specific mode of exit (e.g., an IPO), after it has been divested in a different way (e.g., via a trade sale). In other words, there is competition between the different channels. Competing risks models take these mutually exclusive exit channels into account. The basic concept of the Fine and Gray (1999) model is to focus on the failure function (i.e., the probability that a given mode of exit occurs before a given time), rather than on the survival function. This alternative approach, which requires maximum-likelihood estimation, avoids the biases in the estimation of the hazard rate which would arise by estimating a Cox (1972) model.

Propensity Score Matching. In order to verify that our findings are not driven by potential endogenous selection bias, we replicate the competing risks analysis on a sample constructed using propensity score matching (see, e.g., Dai et al. 2012).

In the first step, we estimate the conditional probability (i.e., the propensity score) of a VC deal to be conducted by a cross-border investor. We therefore run a probit regression using a series of observable characteristics as covariates: firm's age, sales growth, patent stock, total assets, industry dummies and a dummy indicating investments by captive VC investors (as opposed to independent VC investors). We then match each actual cross-border deal to the local deals with the closest propensity scores. More specifically, we first restrict cross-border and local

investments to their common support by dropping cross-border investments whose propensity score is higher than the maximum or less than the minimum propensity score of local investments. We subsequently indentify, for each cross-border transaction, the five local deals that are its nearest neighbors in terms of propensity score. The identification method of the matched investments is "with replacement" (i.e., a local investment can be selected as a match for more than one cross-border investment) and randomized (i.e., in case of ties in propensity scores, a random local investment is selected). Finally, we re-estimate the Fine and Gray (1999) model on the restricted sample of cross-border investments (excluding those outside the common support) and matched local investments.

Discrete-Time Competing Risks Model. The Fine and Gray (1999) model has the advantage of not requiring a parametric assumption about the shape of the baseline failure functions for the different exit events. However, the model assumes that exits may occur at any point in (continuous) time while, in our case, data are based on yearly observations, following the frequency of the accounting information collected. It is hard to predict the extent to which the discrete timing of exit events distorts the results of the estimation based on the Fine and Gray (1999) model.

Therefore, to ensure that our results are robust, we rely on a complementary methodology which assumes exit times to be discrete (Tutz, 1995; Scott and Kennedy, 2005). We thus estimate a multinomial logit model in which the dependent variable is an exit indicator taking different values depending on the exit channel, i.e., 1 for IPO, 2 for trade sale, 3 for liquidation, and 0 for the baseline case of no exit.

The disadvantage of this model is that the shape of the baseline hazard function has to be explicitly modeled. In order to determine the most appropriate functional form for the baseline

hazard, we calculate the weighted kernel-density estimate using the estimated hazard contributions for each type of exit. Our results are illustrated in Figure 1.

[Figure 1 here]

The graphs suggest that a monotonic function might not be appropriate for modeling the hazard rate. The smoothed hazard rate appears to be inverse U-shaped with a peak around 5 years for IPOs, 7 years for trade sales and between 9 and 10 years for liquidation. We will thus include both a linear and a quadratic term in the multinomial logit model to allow for the possibility of an inverse U-shaped hazard rate.[vi]

Variables and descriptive statistics

In this study, we are interested in understanding how cross-border exit conditions provide additional exit opportunities for VC investors beyond local exit conditions. We therefore have to use indicators that describe local and cross-border capital market conditions in our regressions. With respect to local exit conditions, we consider the following variables: the volume of IPOs to GDP (source: Thomson One Banker), the volume of M&As to GDP (source: Thomson One Banker), and the quality of legal rights (source: World Bank), which measures the degree to which collateral and bankruptcy laws protect borrowers and lenders. According to the existing literature, we expect IPO exits to be positively affected by IPO volume, trade-sale exits to be positively affected by M&A volume, and liquidation to be easier when the quality of bankruptcy law in the respective country is stronger.

In order to test Hypotheses 1 and 2, we include measures for the additional exit opportunities induced by cross-border investors. If one or more cross-border investors bring in additional exit

opportunities, the mode of exit should not only be influenced by local exit conditions (i.e., in the venture's country), but also by the conditions in the countries of the cross-border investors. Accordingly, we build two variables taking into account the additional volume of IPOs and M&As in cross-border investors' countries. For IPOs, we compute the total volume of IPOs in all the countries (one or more) of cross-border investors involved in the transaction and divide it by the GDP of the investee's home country (for comparability with the local IPO variable). According to Hypothesis 1, the additional volume of IPOs should be positively correlated with IPO exits. For trade sales, we compute the total volume of M&As in all the countries of cross-border investors involved in a VC syndicate and divide it by the GDP of the venture's country (again, for comparability with the local M&A market activity). According to Hypothesis 2, the additional volume of M&As should be positively correlated with trade-sale exits.

Along the lines of Giot and Schwienbacher (2007), we include a series of investment and firm-specific controls in the regressions. First, we control for the commercial and technological success of the investee company. We assess commercial success through sales growth and capture technological success by the venture's patent stock.[vii] We also control for company size via total assets, which we expect to be positively related to successful exits. In the regressions, these three firm-specific variables are normalized by their sector-specific mean to account for industry differences. Overall, we assume that companies with faster growth and larger patent stock are more likely to exit by IPOs, and less likely to exit via write-offs or buybacks.

Second, we control for the stage of entry of the investor in the company via a dummy identifying follow-on versus initial investments. Follow-on rounds are more likely to occur when positive information is revealed about the company's prospects (Gompers, 1995). Accordingly, we may expect follow-on rounds to be positively correlated to IPOs.

Third, we control for the size of the syndicate of investors, measured by the number of investors in parallel at a given time (with a minimum of 1, for stand-alone investments). Larger syndicates have more resources to lead the company to an IPO and, in addition, companies that are more likely to go public may find it easier to attract additional investors (Brander et al., 2002). We thus expect the size of the syndicate to be positively correlated to the likelihood of an IPO.

Fourth, we control for the nature of the cross-border investors. We include two dummy variables: one to identify cross-border investments by independent VC funds (IVC), and one to identify captive cross-border VC funds (the omitted category therefore being VC investments conducted by local investors). Independent and captive VC funds exhibit different objectives and modes of investment in cross-border deals (Mäkelä and Maula, 2005), which could potentially affect their exit strategies (Chemmanur et al., 2010; Dai et al., 2012).

We present the descriptive statistics of our variables in Table 3, and bivariate correlations between them in Table 4. Average sales growth in our sample is 0.48, which is consistent with the high-growth nature of the young high-tech companies in our sample. The variable exhibits significant variation and the first quartile is negative (-8%), which means that more than one-fourth of our firm-year observations have declining sales. Mean (median) syndicate size in our sample is 3.45 (3.00). The majority of investors in our sample enter the company at the initial financing round, and only 30.0% of the investors enter in a follow-on round without having participated in the first-round.

[Tables 3 and 4 here]

RESULTS

We report the results of the competing risks models in Table 5. The Table illustrates the factors that increase the likelihood of, and reduce the time for reaching one of the three alternative exit events (the competing risks) which we consider in our analysis: IPO, trade sale and liquidation. The order of the independent variables is structured as follows: the first group of variables (sales growth, patent stock and total assets) describes investee-specific characteristics. The second group (follow-on investment, size of the syndicate, and the respective dummies for independent and captive VC funds) comprises deal-specific determinants. The third group includes the country characteristics that are relevant for the alternative divestment opportunities: the IPO market liquidity for the IPO exit channel, the M&A market activity for trade sales, and the quality of the legal system for liquidations. We run two separate regressions for IPOs and trade sales. The first specifications analyze, in the investee's country alone, the impact of the liquidity of the IPO, and the M&A markets, respectively. The second specifications include the additional IPO and M&A activities in the countries of cross-border investors. These two additional variables directly test Hypotheses 1 and 2.

[Table 5 here]

From Table 5, we learn that the size of the investee firm (measured by its total assets) is an important characteristic of the ventures which are finally divested by IPO. Commercial success (measured by sales growth) is only weakly significant in specification (II) of the competing risks analysis for IPO exits. In parallel, we note that low/negative sales growth and a low/diminishing patent stock are clear indicators for subsequent liquidations. Ventures exited via trade sales

exhibit somewhat intermediate characteristics, showing coefficients for commercial and technological performance which are in between those of IPO and liquidation (though sales growth is only weakly significant). This underlines the notion that trade sales offer exit opportunities for a large variety of VC-backed firms and not only for successful ones. Unlike Dai et al. (2012), we have no information regarding investee valuations. Typically no valuation information is disclosed for the exit, and additionally, most of the investee firms are too small to be covered in any commercial data base. Therefore, we cannot distinguish between successful and unsuccessful transactions from the investor's point of view. In principle, even trade sales of ventures with negative sales growth or diminishing patent stock may be successful for the VC firm. Nevertheless, some of the trade sales in our sample may well be "fire sales" (Dai et al., 2012), in which the investor wishes to avoid the effort of liquidating an investee. It is likely that these transactions contribute to the negative significance of the parameters measuring the commercial and technological output of the investees. From the other perspective, we can argue that strategic investors acquire young ventures precisely for "strategic reasons" and that these reasons are not necessarily reflected in economic or technological success measures in the early stages of the ventures' life cycles.

It is not surprising that syndicate size (and follow-on financing in specification II) is positively correlated with exit by IPO and negatively correlated with write-offs. In other words, and consistent with the existing literature (Brander et al., 2002), larger investor syndicates are involved in more successful deals (i.e. exit through an IPO) with several financing rounds, while smaller syndicates (or stand-alone investors) are more likely to be involved in unsuccessful transactions. Since we control for sales growth, this must be related to the combination of two effects: on the one hand, larger syndicates may have more resources to help boost firm

performance. On the other hand, better companies may find it easier to attract more VC investors (Brander et al., 2002). It is fair to acknowledge that in our study we do not attempt to determine the causal link between syndicate size and exit mode. On the contrary, the fact that syndicate size may be related to a firm's unobserved quality allows us to control, albeit partially, for the effect of potential endogeneity in our estimates.

It is also interesting to note that unsuccessful exits are more likely (and happen more quickly) if international investors are involved in the syndicate. This effect is even stronger if the VC investor is an independent fund. That finding matches Devigne, Manigart, et al. (2013), who argue that cross-border investors suffer less from the escalation of commitment bias in decision making. They might judge the situation more objectively, leading to an earlier exit if the company is underperforming. This behavior may be caused by a greater emphasis on professionalism in international syndicates. It could also be the consequence of fewer direct and indirect ties between the cross-border VC investor and the investee corporations: with cultural and physical distance, and with less media attention at home, a venture capitalist might find it easier to trigger the liquidation of an investee.

Finally, and in line with the literature (Black and Gilson, 1998; Jeng and Wells, 2000; Cumming, 2008; Dai et al., 2012), we find that the liquidity of the local stock markets of investees' countries affects the likelihood of IPOs. This is also valid for the relation between local M&A markets and trade-sale exits. We also add to Cumming (2008), who shows that the quality of legal rights facilitates winding-up investee firms.

However, the most important finding is that in addition to the local investee country capital market conditions, the same conditions in investors' countries affect the likelihood of IPOs and trade sales. We provide strong evidence for the importance of cross-border investor M&A

markets for trade sales, and weak evidence (significance level of 10%) for the importance of cross-border IPO markets for IPO exits. This strongly supports hypothesis H2 and weakly supports hypothesis H1.

Table 6 presents our competing risks regressions on a matched sample. The competing risks and the independent variables remain as before. The matching procedure eliminates the potential bias that could arise from receiving cross-border financing.

[Table 6 here]

In general, the results from the previous model remain. Some effects are more pronounced, and others are less so. Propensity score matching reveals that commercial success has a stronger positive effect on the IPO exit channel, consistent with Poulsen and Stegemoller (2008) and Bayar and Chemmanur (2009). We also note that, once we control for potential endogenous selection, hypothesis H1 is no longer supported, while H2 is still significantly verified. Despite the growing importance of foreign IPOs (Bruner et al., 2004; Bell et al., 2012) and the role that cross-border investors undoubtedly play in helping a company to list on a foreign stock market (Hursti and Maula, 2007), the results in Table 6 show no increase in the likelihood of an IPO exit if foreign investors provide additional IPO opportunities. In other words, once we control for potential endogeneity in the selection of cross-border investments, the likelihood of an IPO exit for a venture depends only on the state of the IPO market in the investee's home country and not on that of the investor's home country. This result is surprising when compared to Dai et al. (2012), for example, who note that there is not a single case in their sample of a venture which is backed by local VCs alone cross-listing in a foreign IPO market. This leads us to assume that the

matching procedure on the relatively small number of IPOs discards the necessary covariation to detect the significance of the parameter.

In Table 7, we report our estimates using a discrete-time competing risks model. As with the other models, we differentiate between three exit channels but include the time until the event and its squared term to consider the inversed U-shaped hazard rate in the discrete setting. The results support our arguments and, most importantly, provide further evidence for H1 and H2.

[Table 7 here]

Overall, our findings are robust under various methodological approaches and suggest that local conditions in the host country are the most important factors in determining the mode and time-to-exit of VC investments. We find weak evidence that cross-border investors improve the chances of going public by increasing the size of the stock market where the issue could be placed, as predicted by H1. We find strong evidence that they increase the probability of a trade sale by granting access to their home country M&A markets. Additionally, international syndicates have a tendency to write-off their exposure or sell-back their shares to the entrepreneurs earlier than syndicates of local investors. It is not clear whether this behavior is caused by greater pressure for professionalism in international syndicates, or by an alleviation of the abandonment decision due to physical and cultural distance between investor and investee. Nevertheless, we can in general claim that syndicating with foreign investors improves the quality and efficiency of venture capital financing relationships. On aggregate, better exit conditions will translate into an acceleration of the VC cycle (Gompers and Lerner, 1999) and into a more developed VC market (Black and Gilson, 1998; Groh et al., 2010).

CONCLUSIONS

We study the extent to which international syndication affects the mode of exit of VC investors and the time until this event. We argue that, on top of the potential value-adding effects of international syndicate partners discussed in previous literature, cross-border investors may enhance exit options, through their network of contacts and specific knowledge in their home countries. These additional exit options favor the syndicate partners and the entrepreneur, and therefore constitute an additional reason to welcome cross-border investors.

Our empirical analysis of 1,062 investments in European ventures between 1994 and 2004 confirms that, after controlling for VC syndicate size, local exit conditions, and investee performance, international syndication affects the mode of exit of VC investors and the time to divestment. Trade sales are facilitated in proportion to the additional size of the M&A market in the cross-border investors' country. Nevertheless, the economic relevance of the investee's local exit conditions is more significant than that of the cross-border investor's.

The effect is weaker for IPOs. The IPO volume in the countries of cross-border investors is found to be positively correlated to IPO exits, but the estimated parameter is statistically significant at conventional levels only in some of the specifications that we estimate. We argue that the partial significance of this result is due to the fact that cross-border IPOs remain relatively infrequent and, as a consequence, the extent to which cross-border investors open additional exit opportunities in their home countries is hardly detectable.

Finally, we find that international syndicates exit earlier from underperforming companies. This is in line with previous evidence about the enhanced ability of cross-border investors (compared to local investors) to abandon unsatisfactory investments rather than escalating their commitment.

Our results are generally consistent across different estimation methods (continuous and discrete-time competing risks models) and are robust to potential endogeneity of selection.

To conclude, we find that cross-border VC investments are beneficial for all participants in early-stage financing relationships. They increase the exitable market and reduce the misdirection of resources into unsuccessful investments. Cross-border VC investments therefore increase the efficiency of entrepreneurial finance. Future research could build on our results and investigate whether additional effects of international syndication are detectable at the micro level of young ventures (e.g. via exploiting growth opportunities in the investor's country or benefiting from its local human capital). Furthermore, early termination of unsuccessful investments by cross-border investors deserves closer scrutiny. It will be interesting to study whether this effect is related to cultural and geographic distance or to some kind of accelerated quest for professionalism in international VC transactions.

[i] Note: throughout this paper, we regard share buy-backs as unsuccessfully exited transactions. There is, in general, little information available on this exit route. However, it is reasonable to assume that the development of the venture is likely to be neither positive, nor as expected, if VC investors sell their claims back to the entrepreneurs.

[ii] Further information about the sampling process of the VICO dataset can be found in Bertoni and Martì Pellon (2011).

[iii] By VC investment, here, we refer to a unique company-investor pair. The number of investments associated with each company in our sample is then equal to the number of different VC investors which, in any round, invested in the company.

[iv] Cross-border investments by governmental VC funds are extremely infrequent, given the objective that most of these funds have with respect to developing national entrepreneurial activities. Removing the two cross-border governmental VC investments from our sample does not affect our results.

[v] We merge write-offs and buybacks into a single category because we do not have sufficient observations to maintain buybacks as a separate category. As noted in endnote i, we refer to these as "unsuccessfully exited" or "liquidated" companies. Our results are virtually unaffected if buybacks are removed from the sample.

[vi] We also estimate the discrete-time competing risks model on the matched sample. Results are not reported here for the sake of conciseness, but are available from the authors upon request. Results are qualitatively similar. In particular, cross-border IPO activity is a positive and weakly significant (p-value<10%) determinant of IPO exits, and cross-border M&A activity is a positive and highly significant (p-value<1%) determinant of trade sales.

[vii] Following Griliches (1998), patent stock in year *t* is measured as the depreciated patent stock in the previous period plus the number of successful patent applications during year *t.* We use a 15% discount rate.

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TABLES AND FIGURES

Table 1: Distribution of Sample Firms and Investments

Panel A: Industry and Country Distribution of Firms and Investments

	Firms		Investments	
	N	%	N	%
Industry				
Biotech & Pharma	99	21.43	297	27.97
ICT manufacturing	81	17.53	187	17.61
Internet	79	17.10	158	14.88
Software	171	37.01	358	33.71
TLC	32	6.93	62	5.84
Country				
Belgium	74	16.02	195	18.36
Finland	48	10.39	107	10.08
France	47	10.17	122	11.49
Germany	68	14.72	154	14.50
Italy	33	7.14	54	5.08
Spain	70	15.15	123	11.58
United Kingdom	122	26.41	307	28.91
Total	462	100	1,062	100

Panel B: Local and Cross-Border Investments by Investor's Home Region, Syndication Mode, and Type of VC

Investment		N	%
Local		872	82.1
Cross-border		190	17.9
Total		1,062	100
Cross border…			
	…from continental Europe	96	50.5
	…from the USA	54	28.4
	…from the UK	26	13.7
	…from Asia and Australia	14	7.4
	…syndicated with local partners	168	88.4
	…no local partners involved	22	11.6
	…by independent VC	121	63.7
	…by captive VC	69	36.3
Total		190	100

Table 2: Distribution of Investments by Type of Exit

	Exited		IPO		Trade sale		Buyback		Write-off		No exit	
	N	%	N	%	N	%	N	%	N	%	N	%
Industry												
Biotech & Pharmaceuticals	177	59.6	57	19.2	50	16.8	5	1.7	65	21.9	120	40.4
ICT manufacturing	128	68.5	40	21.4	33	17.7	5	2.7	50	26.7	59	31.6
Internet	99	62.7	20	12.7	36	22.8	2	1.3	41	25.9	59	37.3
Software	214	59.8	3	0.84	91	25.4	11	3.1	109	30.4	144	40.2
TLC	37	59.7	4	6.45	11	17.7	1	1.6	21	33.9	25	40.3
Host country												
Belgium	141	72.3	31	15.9	50	25.6	0	0.0	60	30.8	54	27.7
Finland	62	57.9	1	0.93	34	31.8	1	0.9	26	24.3	45	42.1
France	41	33.6	13	10.7	17	13.9	0	0.0	11	9.0	81	66.4
Germany	126	81.8	16	10.4	14	9.09	2	1.3	94	61.0	28	18.2
Italy	27	50.0	13	24.1	2	3.70	8	14.8	4	7.4	27	50.0
Spain	48	39.0	0	0.00	18	14.6	13	10.6	17	13.8	75	61.0
United Kingdom	210	68.4	50	16.3	86	28.0	0	0.0	74	24.1	97	31.6
Investment												
Cross-border	142	74.7	42	22.1	37	19.5	3	1.6	60	31.6	48	25.3
Local	513	58.8	82	9.40	184	21.1	21	2.4	226	25.9	359	41.2
Total	655	61.7	124	11.7	221	20.8	24	2.3	286	26.9	407	38.3

Table 3: Summary Statistics

The table presents summary statistics of the variables used in the analysis. *Sales growth* is the year-on-year increase in log sales (1% winsorized). *Patent stock* is the natural logarithm of one plus the stock of patents granted to the company and computed as in Griliches (1998), using a depreciation rate of 15%. *Total assets* is the natural logarithm of the firm's total assets. *Syndicate size* is the number of investors in the VC syndicate at time *t*. *Cross-border IVC investment* is a dummy equal to one if there is at least one cross-border IVC investor in the VC syndicate in year *t*. *Cross-border captive investment* is a dummy equal to one if there is at least one cross-border captive VC investor in the VC syndicate in year *t*. *IPO market size in host country* is the volume of IPOs (source: Thomson One Banker) in the host country divided by host country's GDP. *IPO market size for cross-border investors* is the aggregate volume of IPOs (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. *M&A market size in host country* is the volume of M&A deals (source: Thomson One Banker) in the host country divided by host country's GDP. *M&A market size for cross-border investors* is the aggregate volume of M&A deals (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate divided by host country GDP. *Legal rights in host country* is the quality of legal rights in the host country (Source: World Bank – Doing Business).

Variable	Observations	Mean	St. dev.	25%	Median	75%
Sales growth	4,066	0.48	1.51	-0.08	0.15	0.62
Patent stock	7,870	0.26	0.47	0.00	0.00	0.42
Total assets	6,170	7.21	2.54	6.35	7.70	8.80
Follow-on	8,159	0.30	0.46	0.00	0.00	1.00
Syndicate size	8,159	3.45	2.78	1.00	3.00	5.00
Cross-border IVC investment	8,159	0.28	0.45	0.00	0.00	1.00
Cross-border captive VC investment	8,159	0.23	0.42	0.00	0.00	0.00
IPO market size in host country	8,159	0.61	0.47	0.27	0.55	0.86
IPO market size for cross-border investors	8,159	6.78	23.18	0.00	0.00	0.83
M&A market size in host country	8,159	7.29	5.69	3.22	5.98	10.22
M&A market size for cross-border investors	8,159	42.53	162.45	0.00	0.00	7.32
Legal rights in host country	8,159	7.30	1.49	6.00	7.00	9.00

Table 4: Correlation Table

The table presents the pairwise correlations between the variables used in the analysis. *Sales growth* is the year-on-year increase in log sales (1% winsorized). *Patent stock* is the natural logarithm of one plus the stock of patents granted to the company and computed as in Griliches (1998), using a depreciation rate of 15%. *Total assets* is the natural logarithm of the firm's total assets. *Syndicate size* is the number of investors in the VC syndicate at time *t*. *Cross-border IVC investment* is a dummy equal to one if there is at least one cross-border IVC investor in the VC syndicate in year *t*. *Cross-border captive investment* is a dummy equal to one if there is at least one cross-border captive VC investor in the VC syndicate in year *t*. *IPO market size in host country* is the volume of IPOs (source: Thomson One Banker) in the host country divided by host country's GDP. *IPO market size for cross-border investors* is the aggregate volume of IPOs (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. *M&A market size in host country* is the volume of M&A deals (source: Thomson One Banker) in the host country divided by host country's GDP. *M&A market size for cross-border investors* is the aggregate volume of M&A deals (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate divided by host country GDP. *Legal rights in host country* is the quality of legal rights in the host country (Source: World Bank – Doing Business).

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Sales growth	1.0000										
(2) Patent stock	-0.0377	1.0000									
(3) Total assets	-0.0220	0.1070	1.0000								
(4) Follow-on	-0.0889	0.1733	0.1906	1.0000							
(5) Syndicate size	-0.0644	0.3357	0.3263	0.3606	1.0000						
(6) Cross-border IVC investment	0.0272	0.2025	0.2088	0.2347	0.4950	1.0000					
(7) Cross-border captive VC investment	-0.0415	0.2918	0.2507	0.2241	0.6165	0.0792	1.0000				
(8) IPO market size in host country	0.0907	-0.0043	0.0355	0.0090	0.0441	0.0044	0.0086	1.0000			
(9) IPO market size for cross-border investors	-0.0122	-0.0044	0.1674	0.0588	0.4262	0.4467	0.5485	-0.0559	1.0000		
(10) M&A market size in host country	0.1046	-0.0224	0.0447	0.0211	0.0475	0.1558	0.0073	0.2490	-0.0541	1.0000	
(11) M&A market size for cross-border investors	0.0208	-0.0129	0.1711	0.0373	0.3882	0.4102	0.4776	-0.0546	0.9048	-0.0064	1.0000
(12) Legal rights in host country	-0.0183	0.0736	-0.0157	0.1583	0.2344	0.2481	0.1443	0.1106	0.0122	0.4903	0.0053

Table 5: IPO, Trade Sales and Liquidation: Competing Risks Models on Full Sample

The table presents the results of a competing-risks regression fit by maximum likelihood according to the method employed by Fine and Gray (1999). Robust standard errors are reported in brackets. *Sales growth* is the year-on-year increase in log sales (1% winsorized). *Patent stock* is the natural logarithm of one plus the stock of patents granted to the company and computed as in Griliches (1998), using a depreciation rate of 15%. *Total assets* is the natural logarithm of the firm's total assets. *Sales growth*, *Patent stock* and *Total assets* are normalized by the industry mean in the sample. *Syndicate size* is the number of investors in the VC syndicate at time *t*. *Cross-border IVC investment* is a dummy equal to one if there is at least one cross-border IVC investor in the VC syndicate in year *t*. *Cross-border captive investment* is a dummy equal to one if there is at least one cross-border captive VC investor in the VC syndicate in year *t*. Hence, the omitted category is no cross-border investor. *IPO market size in host country* is the volume of IPOs (source: Thomson One Banker) in the host country divided by host country's GDP. *IPO market size for cross-border investors* is the aggregate volume of IPOs (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. *M&A market size in host country* is the volume of M&A deals (source: Thomson One Banker) in the host country divided by host country's GDP. *M&A market size for cross-border investors* is the aggregate volume of M&As (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. *Legal rights in host country* is the quality of legal rights in the host country (Source: World Bank – Doing Business). ***: p-value<0.1%, **: p-value<1%, *: p-value<5%, †: p-value<10%.

Variable	IPO		Trade Sales		Liquidation
	(I)	(II)	(I)	(II)	
Sales growth	0.118	0.137†	-0.173†	-0.179†	-1.183***
	(0.085)	(0.081)	(0.101)	(0.101)	(0.146)
Patent stock	0.069	0.312	-0.730**	-0.613*	-1.974***
	(0.327)	(0.394)	(0.259)	(0.273)	(0.468)
Total assets	1.132***	1.167***	0.032	0.031	-0.030
	(0.156)	(0.165)	(0.047)	(0.048)	(0.103)
Follow-on	0.426	0.568*	0.088	0.183	-0.357
	(0.276)	(0.281)	(0.193)	(0.193)	(0.525)
Syndicate size	0.303***	0.288***	0.035	0.017	-0.361***
	(0.048)	(0.048)	(0.034)	(0.034)	(0.085)
Cross-border IVC investment	-0.311	-0.487	-0.071	-0.205	1.786***
	(0.400)	(0.387)	(0.227)	(0.244)	(0.393)
Cross-border captive VC investment	-0.626	-0.872	0.233	0.003	0.854†
	(0.466)	(0.575)	(0.272)	(0.338)	(0.457)
IPO market size in host country	79.587***	76.176***			
	(23.304)	(21.922)			
IPO market size for cross-border investors		0.798†			
		(0.412)			
M&A market size in host country			5.810***	6.416***	
			(1.245)	(1.213)	
M&A market size for cross-border investors				0.129**	
				(0.046)	
Legal rights in host country					0.241*
					(0.117)
Observations	3,199	3,199	3,199	3,199	3,199
Groups	783	783	783	783	783
Log likelihood	-279.794	-278.709	-791.169	-787.966	-117.784

Table 6: IPO, Trade Sales and Liquidation: Competing Risks Models on Matched Sample

The table presents the results of a competing-risks regression fit by maximum likelihood according to the method employed by Fine and Gray (1999). Robust standard errors are reported in brackets. The sample is composed of cross-border deals and matched local deals. Each cross-border deal is matched to three local deals (with replacement) using propensity score matching (matching variables are: age, total assets and industry). *Sales growth* is the year-on-year increase in log sales (1% winsorized). *Patent stock* is the natural logarithm of one plus the stock of patents granted to the company and computed as in Griliches (1998), using a depreciation rate of 15%. *Total assets* is the natural logarithm of the firm's total assets. *Sales growth*, *Patent stock* and *Total assets* are normalized by the industry mean in the sample. *Syndicate size* is the number of investors in the VC syndicate at time *t*. *Cross-border IVC investment* is a dummy equal to one if there is at least one cross-border IVC investor in the VC syndicate in year *t*. *Cross-border captive investment* is a dummy equal to one if there is at least one cross-border captive VC investor in the VC syndicate in year *t*. Hence, the omitted category is no cross-border investor. *IPO market size in host country* is the volume of IPOs (source: Thomson One Banker) in the host country divided by host country's GDP. *IPO market size for cross-border investors* is the aggregate volume of IPOs (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. *M&A market size in host country* is the volume of M&A deals (source: Thomson One Banker) in the host country divided by host country's GDP. *M&A market size for cross-border investors* is the aggregate volume of M&As (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. IPO and M&A market size variables are expressed as percentages. *Legal rights in host country* is the quality of legal rights in the host country (Source: World Bank – Doing Business). ***: p-value<0.1%, **: p-value<1%, *: p-value<5%, †: p-value<10%.

Variable	IPO		Trade Sales		Liquidation
	(I)	(II)	(I)	(II)	
Sales growth	0.396*	0.449**	-0.095	-0.113	-1.013***
	(0.156)	(0.137)	(0.139)	(0.139)	(0.196)
Patent stock	0.100	0.610	-0.744*	-0.516	-2.199***
	(0.493)	(0.832)	(0.344)	(0.359)	(0.584)
Total assets	1.715***	1.773***	0.010	0.023	-0.054
	(0.511)	(0.504)	(0.075)	(0.079)	(0.122)
Follow-on	0.910*	1.282†	0.067	0.267	-0.036
	(0.417)	(0.665)	(0.243)	(0.243)	(0.580)
Syndicate size	0.538**	0.504**	0.128**	0.089*	-0.277**
	(0.192)	(0.185)	(0.040)	(0.041)	(0.093)
Cross-border IVC investment	-0.022	-0.250	-0.601	-0.694	1.094*
	(0.837)	(0.732)	(0.403)	(0.424)	(0.517)
Cross-border captive VC investment	-0.672	-1.331	0.244	-0.167	0.728
	(0.829)	(1.286)	(0.343)	(0.467)	(0.599)
IPO market size in host country	155.455**	141.689**			
	(57.769)	(54.647)			
IPO market size for cross-border investors		1.083			
		(0.949)			
M&A market size in host country			10.048***	11.454***	
			(2.130)	(2.041)	
M&A market size for cross-border investors				0.156**	
				(0.049)	
Legal rights in host country					0.311*
					(0.155)
Observations	1,241	1,241	1,241	1,241	1,241
Groups	310	310	310	310	310
Log likelihood	-91.682	-95.467	-330.440	-359.726	-44.060

Table 7: IPO, Trade Sales and Liquidation: Multinomial Logit

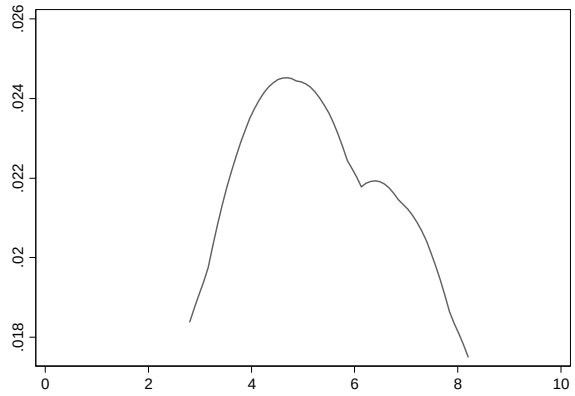
The table presents the results of a constrained multinomial logit regression fit by maximum likelihood. Robust standard errors reported in brackets. Outcomes are IPO, Trade Sales and Liquidation. *Sales growth* is the year-on-year increase in log sales (1% winsorized). *Patent stock* is the natural logarithm of one plus the stock of patents granted to the company and computed as in Griliches (1998), using a depreciation rate of 15%. *Total assets* is the natural logarithm of the firm's total assets. *Sales growth*, *Patent stock* and *Total assets* are normalized by the industry mean in the sample. *Syndicate size* is the number of investors in the VC syndicate at time *t*. *Cross-border IVC investment* is a dummy equal to one if there is at least one cross-border IVC investor in the VC syndicate in year *t*. *Cross-border captive investment* is a dummy equal to one if there is at least one cross-border captive VC investor in the VC syndicate in year *t*. Hence, the omitted category is no cross-border investor. *Duration* is the duration, in years, of the focal VC investment. *IPO market size in host country* is the volume of IPOs (source: Thomson One Banker) in the host country divided by host country's GDP. *IPO market size for cross-border investors* is the aggregate volume of IPOs (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. *M&A market size in host country* is the volume of M&A deals (source: Thomson One Banker) in the host country divided by host country's GDP. *M&A market size for cross-border investors* is the aggregate volume of M&As (source: Thomson One Banker) in the countries of all cross-border investors in the VC syndicate, divided by host country's GDP. *Legal rights in host country* is the quality of legal rights in the host country (Source: World Bank – Doing Business). ***: p-value<0.1%, **: p-value<1%, *: p-value<5%, †: p-value<10%.

Variable	IPO	Trade Sales	Liquidation
Sales growth	0.214*	-0.218†	-1.322***
	(0.095)	(0.124)	(0.184)
Patent stock	0.365	-0.732*	-2.094***
	(0.422)	(0.300)	(0.545)
Total assets	1.415***	0.129*	0.017
	(0.207)	(0.054)	(0.114)
Follow-on	1.035**	0.405*	-0.368
	(0.332)	(0.202)	(0.539)
Syndicate size	0.279***	0.044	-0.349***
	(0.042)	(0.033)	(0.085)
Cross-border IVC investment	-0.514	-0.296	1.683***
	(0.406)	(0.246)	(0.414)
Cross-border captive VC investment	-0.828	0.211	0.990†
	(0.679)	(0.357)	(0.510)
IPO market size in host country	93.374***		
	(24.760)		
IPO market size for cross-border investors	1.001*		
	(0.404)		
M&A market size in host country		8.575***	
		(1.350)	
M&A market size for cross-border investors		0.135**	
		(0.051)	
Legal rights in host country			0.292*
			(0.125)
Log(duration)	3.147***	0.369	1.301
	(0.849)	(0.460)	(0.972)
Log(duration)^2	-0.895**	0.253	-0.516
	(0.348)	(0.176)	(0.432)
Observations		3,199	
Groups		789	
Pseudo-Log likelihood		-822.029	

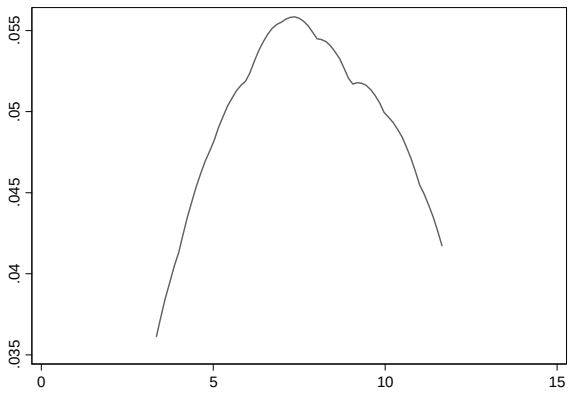
Figure 1: Baseline Smoothed Hazard Rate for IPOs, Trade Sales, and Liquidation

The figures show the baseline smoothed hazard rate for three different modes of exit: IPOs (Panel A), Trade Sales (Panel B), and Liquidation (Panel C). The hazard is calculated as a weighted kernel-density estimate using the estimated hazard contributions. Competing exits are excluded from estimations.

Panel A: Hazard Rate for IPOs



Panel B: Hazard Rate for Trade Sales



Panel C: Hazard Rate for Liquidation