

IPO/M&A Exits by Venture Capital in India: Do Agency Risks Matter?

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Abstract Venture Capital Firms (VCs) encounter severe information asymmetry risks at almost every stage in their investment lifecycle. This paper explores the agency risks arising from information asymmetry during the stage of exits by VCs from the funded companies in their portfolio and how that impacts the incidence of specific types of type of exits (IPOs/M&As). In this empirical study, by using the data on IPO and M&A exits from venture capital-funded companies, we show how the ability of prospective buyers to better resolve agency risks is directly correlated with the incidence of the above exit types. Using the technique of logistic regression, we demonstrate that factors such as syndication, specialization focus of the VC firm (in terms of stage and sector) and the level of its social capital (proxied by its age and experience) drive the success rate of exits. This is one of first studies in context of exits from VC funded companies in the Indian context.

Keywords Venture capital, exits, agency risks, India, social capital, syndication, domain specialization

I. Introduction

Venture Capital (VC) is considered one of the most prominent financial innovations of the 20th century. Given its penchant for opportunity recognition in emerging domains, especially, nascent technologies, innovations and business models (Gompers and Lerner, 2004); it has managed to successfully fund and incubate most leading technology giants of today. In fact, the

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majority of the large high-technology firms could possibly have never attained their current scale if not for the timely infusion of VC. In fact, a majority of unicorns in India and overseas today are VC funded.

Despite their growing importance, one of the significant challenges encountered by venture capitalists (VCs) world-over concerns their exits from the funded investee firms. In fact, early stage high-tech firms generally do not have sufficient cash flow to pay interest on debt and/or dividends on equity investments; hence sale of stake in funded investee firms is possibly the only means for the VCs to obtain their Return on Investments. This makes exits an extremely critical phase in the entire VC investment process. Broadly, there are five different kinds of exit options available to any VC firm (Schwienbacher, 2009): Initial Public Offering (IPO) - the company achieves a stock market listing so that the VCs can sell their shares in the public; Trade sale (Mergers and Acquisition) - the sale of the investee company to another company; Management buy-out (Repurchase) - the VCs sell back their shares to the entrepreneur; Refinancing (Secondary Sale) - the VC's stocks are purchased by another institutional investor (e.g. another upstream VC); and Liquidation (write-off) - the company files for bankruptcy. Typically, IPO and Trade Sale (M&A) exit types are regarded as most profitable ones for VCs in terms of the returns obtained therein (Schwienbacher, 2009) and have thus been defined as profitable exits in this study.

In this paper, we focus on the agency risks emanating from information asymmetry between VCs and the entrepreneurs in India, and how the same impacts the relative profitability of their exits from funded investee companies. In the context of VC investing, agency risks emanate from hidden actions of the entrepreneurs, who in the pursuit of their own self-interest take certain actions that are unobservable by the investing VCs (Barry, 1994). During the exit stage as well, there exists significant asymmetry between the sellers of the given firm's equity and its potential buyers (Cumming and Macintosh, 2003a; Cumming and Macintosh, 2003b). In general, the sellers have greater access to information about the entrepreneurial firm in terms of its true quality. Moreover, they have an enhanced ability to evaluate that information owing to their lengthy involvement with the firm, and also have superior understanding of the space in which the firm is operating (viz. its industrial environment, number of competitors and their niche skills, etc.). Some buyers are relatedly less well positioned to resolve these information asymmetries as compared to others, consequently reducing the price at which the VC's interest is sold (Cumming and Macintosh, 2001). In general, greater information risks result in heavier discounting of the investee firm's future cash flows. Thus, the buyers who are less able to resolve these information asymmetries will pay less for VC's interest in the entrepreneurial firm than buyers who are better positioned to do so. Consequently, the VC firm, as a seller, would prefer to select the

buyer who is best able to resolve information asymmetries (Cumming and Macintosh, 2003a; Cumming and Macintosh, 2003b). Extant literature points to the fact that since information asymmetries are better resolved in the context of IPO and M&A exits, it makes them most profitable in terms of returns (Schwienbacher, 2009).

Accordingly, the primary question we ask in the paper is as follows: How do the magnitude of agency risks impact the likelihood of an IPO/M&A exit from a funded investee firm? We answer this question in the context of VCs operating in India and the deals funded by them between the years 2004 and 2014.

This is one of the first studies in the context of VC exits in India. Although, the VC industry in India has grown leaps and bounds over the past several years, very little is known in the context of actual strategies of VC firms, especially with regard to exits. Till now, the findings for the Chinese VC industry have largely been extrapolated for India. However, China and India differ greatly in many ways and, thus, applying the findings from China in the Indian context is not all appropriate (Huang and Khanna, 2003). Especially in the context of VC exits, the regulatory processes for China and India are indeed completely different (Joshi, 2015). Hence comparing Chinese and Indian exits scenario is not exactly an apples-to-apples comparison and there exists a need to study Indian VC industry separately in its own right. This study precisely attempts to do the same.

This paper is organized into the following sections: The next section discusses the emergence of VC in India, with a focus on VC exits. The following section provides a detailed survey of literature, which is followed by the conceptual framework outlining of testable hypotheses. The next section discusses the sample, variable descriptions and methods of analysis. The sections following present the profile of VC exits, empirical results and a detailed discussion around the same. The final section concludes.

II. Venture Capital in India

1. Background

Over the past decade, VC has emerged as one of the prominent conduits for funding businesses in emerging domains in India. About 85% of the currently active VCs have been established only during the latter half of the past decade (Venture Intelligence, 2014). The emergence of VC as a funding source to be reckoned with has been incidental with the rise of high-technology start-ups. As of 2014, there were about 350+ VCs operating in India (Venture

Intelligence, 2014). Also, India ranks second among the emerging economies in terms of the global deployment of VC funds, only after China (Ernst and Young, 2014).

It has been widely believed that the credit meltdown in developed economies (particularly the US and the Eurozone) was the focal factor that drove VC funds worldwide to scour for prospective investment destinations. These were then directed to emerging economies such as India (and China) that had exhibited strong resilience in the face of the recession in the western world (Bain Consulting, 2011; 2012). For India, coincidentally this trend also corresponded with high debt costs (high interest rates owing to high inflation) and depressed equity markets, thus making VC a potentially attractive source of funding from the viewpoint of Indian entrepreneurs (Bain Consulting, 2011; 2012). To sum up, there have been both 'push' as well as 'pull' forces at play that have attracted these VC funds to India (Joshi and Bala Subrahmanya, 2014).

Foreign VCs have led this rally of growth of VC investments in India. In 2014, about 54% of the Foreign Direct Investment received by India was in the form of VC or Private Equity. In fact, 80% of the VC funds invested in India are raised overseas (Ernst and Young, 2014). Several MNCs such as Intel, Qualcomm, SAP and Cisco have established corporate VC arms to leverage the technologies developed by the Indian start-ups (Planning Commission, 2012; Venture Intelligence, 2014). Other global technology giants such as Microsoft, Google and Amazon have set up their own business accelerators as well.

2. VC Exits from Investee Ventures in India

Despite the spurt in VC investments, exits from VC funded companies in India lagged behind for a long time (Joshi, 2015). One of the principal reasons for the same is the high entry-level valuation. Overpricing of deals at the investment phase, translate to fewer exits in terms of desired multiples (Bain, 2014). The other important cause has been the moribund state of stock markets till 2015 or so. Post 2015, even as the total number of exits shot up, the overall value of exits remained flat (Bain Consulting, 2015). However, of late the exits scene has been considerably improving with the maturity of the VC-entrepreneurial ecosystem.

Yet, more than 75% of the exits tend to be via the M&A route. The only difference has been that earlier the Indian start-ups were primarily acquired by foreign firms; now there are many firms of Indian origin itself that are leading these acquisitions (Bain Consulting, 2016). This is undeniably a sign of the maturing ecosystem. Over the past couple of years, there have been a few

secondary-sale exits that have been touted to be highly profitable. In fact, Tiger Global and Softbank are two such important VCs, a secondary sale to whom is viewed equivalent to an IPO (Livemint, 2017). Yet, such exits are just an exception and not the rule. In terms of sheer volume, majority of exits are still via the M&A routes. In fact, till date in 2018, about 95% of the exits have been via the M&A route (Livemint, 2018).

Even today, exiting via the IPO route still remains a concern. Based on the current regulations of the Securities and Exchange Board of India (SEBI), the Indian stock market regulator, it is extremely difficult for technology-focused companies to get listed on the Indian stock exchanges (BSE and NSE). Often VC-funded businesses are top-line based and not bottom-line based and hence do not have a historical track record of profitability - which is still one of the pre-conditions for listing (SEBI, 2015). Neither are these ventures allowed to list directly in overseas markets (Planning Commission, 2012) prior to listing on Indian bourses. In this regard, the government has established SME exchanges in 2012 (Bala Subrahmanya, 2014), yet these exchanges suffer from the lack of liquidity owing to low business volumes. Since 2015, SEBI also established Alternative Capital Raising platforms in this regard; however, these are still devoid of sufficient trading volumes.

Apart from the above procedural issues, there remain several other areas of concern. A recent study on VC investing showed the presence of severe trust deficit between VC firms and prospective entrepreneurs, especially in early stage ventures (Panda and Dash, 2016; Joshi, 2018a; 2018b; 2018c). Given the fact that the legal system is yet to catch up with the rapidly evolving VC-entrepreneur ecosystem, it can be fairly difficult to enforce contracts. Moreover, Indian entrepreneurs still regard VC as largely a funding source and resist the overall involvement in other operational and strategic arenas of their ventures (Bain Consulting, 2012). VCs investing in family-owned businesses are found to face severe corporate governance issues (Joshi, 2015). All of the above taken together greatly enhances the magnitude of agency risks encountering any VC firm. These risks only get further magnified at the stage of exits.

III. Survey of Literature

Exiting the funded venture is the final stage in the VC's investment lifecycle. The exit stage is considered so important that the potential for exit is one of the primary driving factors affecting the entry decision itself. Most ventures do not generate any cash flows during the initial years and hence the payment of

dividends to investors is often not possible. Thus, exit is the only way for a VC to realize its return on investment (RoI).

VCS are not long-term investors and would, thus, have the incentive to exit at the most profitable opportunity without unnecessary delay. Secondly, exit is the signal of VC quality. Such a signal is important for successful follow-on fund-raising by the VC firms. A successful exit enables the VC to reallocate funds across other investments. Above all, a credible threat of exit may minimize potential agency problems and prompt the entrepreneur to exert more effort (Schwienbacher, 2009).

1. Agency Risks and VC Exits

As such, information asymmetry is the mainstay of VC-funded projects in general. Typically, two types of vertical agency problems plague the VC industry: one - between investors (fund providers) and fund managers (VC firms) and two - between fund managers (VC firms) and entrepreneurs. Additionally, there is a third set of agency problems that are horizontal in nature, viz. among VC investors themselves arising due to co-investment or deal syndication (Bartlett, 2006). Syndication refers to multiple VC firms investing in single deal. The agency risks among the multiple VC firms arise almost at every stage in the VC-investee firm lifecycle from investment to exits (Lerner, 1994).

The focus of this discussion is on the agency problems between fund managers (VC firms) and entrepreneurs during the final stage of the VC lifecycle viz. exit from investee companies. At this stage, there exists significant asymmetry between the sellers of the given firm's equity and its potential buyers (Cumming and Macintosh, 2003a; 2003b). In general, the sellers have greater access to information about the entrepreneurial firm in terms of its true quality. Moreover, some buyers are relatively less well positioned to resolve these information asymmetries as compared to others consequently reducing the price at which the VC firms' interest is sold (Cumming and Macintosh, 2001). In general, greater information risks result in a heavier discounting of the investee firm's future cash flows. As in the classic case of a typical 'market for lemons' situation, not knowing the true quality of a firm, prompts potential buyers to arrive at a significantly lower valuation of the VC's stake as compared to the those who are better equipped to adjudge the true quality. On the contrary, the VC firm as a seller would prefer to select the buyer who is best able to resolve the underlying information asymmetries since that enhances the prospective valuation of the venture (Cumming and Macintosh, 2003a; 2003b).

In this regard, the potential buyers in an IPO and M&A are known to best resolve information asymmetries (Cumming and Macintosh, 2001; 2003a; 2003b). This can be seen from the fact that the Internal Rates of Return (IRR) on IPOs and M&As are typically the highest as compared to other exit routes (Cumming and Johan, 2010). This finding has been noted in the context of empirical studies pertaining to VC exits for several countries including United States, Canada, United Kingdom and Europe (Cumming and Macintosh, 2003a; Cumming and Macintosh, 2003b; Cochrane, 2005; Nikoskelainen and Wright, 2007). Thus, in general, there exists a pecking order in terms of the profitability of exits. It has been shown empirically, that in general, the VC exits display the following rank order (in the decreasing order of their profitability) - IPOs, M&As, Re-financing, Re-purchase and Write-offs (Cumming and Macintosh, 2003a; Cumming and Macintosh, 2003b).

2. IPO and Trade Sales

Among the various exit routes IPOs have been extensively discussed in literature. IPO is known to be the most profitable exit route for VC investments worldwide (Sahlman, 1990; Black and Gilson, 1998; Cumming and MacIntosh, 2003a; 2003b). Gompers (1996) observes that the average rate of return for VC financed firms that go public is 60% as compared to that of 15% for a trade sale.

Most studies about the relationship of VC investments and IPOs do not focus directly on exit issues per se, but rather they discuss about how an IPO event is a measure of VC performance. There is a fundamental difference in the decision of other ventures to go public and that of a VC backed venture to go public (Schwienbacher, 2009). As compared to the other companies, for a VC-backed venture, the decision to go public is not simply a way to adjust its capital structure (i.e. the debt-equity ratio) per se. Rather it is driven by the need to raise more funds and allow the VC to divest. Also, VC backed start-ups do not simply time their IPOs for hot issue markets. But, going public is vital for their survival itself as they require substantial funds to stay in business (Myers and Majluf, 1984). Finally, the share-holders of the VC-backed companies that go public do not get paid in terms of dividends; rather potential gains for shareholders are limited to increases in the stock-price. Comparing the performance of VC-backed IPOs and non-VC backed IPOs gives us an estimate of the value-added services provided by the VC. VC- backed IPOs in the long run are known to outperform the non-VC backed IPOs (Gompers and Lerner, 1999).

Trade Sale (M&A exit) is attractive to the VC over an IPO as the VC gets immediate 'cash in return' (an IPO usually has a lock-in period for the VC). It

also implies an immediate change in the ownership and a loss of control for the entrepreneur. Transfer of technology is often the most contentious issue in case of a trade sale. Hence, a strategic buyer can sometimes decide to partly invest in the venture along with the VC. This can reduce the potential problem of transfer of technology that is usually associated with a trade sale (Schwienbacher, 2009). There is little empirical research on trade sales. Since the relevant data for trade sales is not available in the public domain, empirical research in this area is limited.

3. Research Gaps

To start with, the impact of geographic location of the VC firm and in this context, the role of networks in reducing agency risks and its corresponding impact on the success rate of exits has not been analysed in the extant literature so far.

Also, the impact of factors such as sector-focus especially in the context of geographic proximity between VCs and the funded investee ventures and its corresponding impact on exit success has not been analysed so far.

Finally, in the Indian context studies on VC exits are almost non-existent. The sole source of information available so far in this regard, is through periodic reports of consulting companies. On the contrary other emerging economies such as China have several studies in this context. Given the growth trajectory of VC industry in India, there exists a strong need for such a study.

IV. Conceptual Framework and Research Propositions

In this section, we first lay out the conceptual framework for the study, which is then followed by detailing out the individual testable propositions.

1. Conceptual Framework

The conceptual framework in Figure 1 is aimed at identifying determinants of successful exits. In this analysis, the focus is on IPOs and M&A exits as they are regarded to be most profitable for the VC firms. There are various aspects that govern the profitability of VC exits - the profile of the market that the start-up operates in, profile of the VC firm and finally the profile of the start-up itself. Scale of the firm, sector/domain of operations, current and future expected size of the focus market, specific market segment, viz. B2B or B2C, degree of innovation in the product offering especially in the context of it being a disruptive of the prevailing status-quo, geography in which the start-up

is located and deep pockets of potential buyers are just a few of these factors. However, for the purpose of this study, we have focused only on those factors that are indicative of the level of agency risks. These include - Syndication (co-investment with other peer VC firms), Stage of investment and sector focus of the VC firm, Social Capital of VC firm (proxied by its age and experience), its ownership type (Foreign or Domestic) and its geographical location in India (proxy for synergies with the other elements in the entrepreneurial ecosystem)

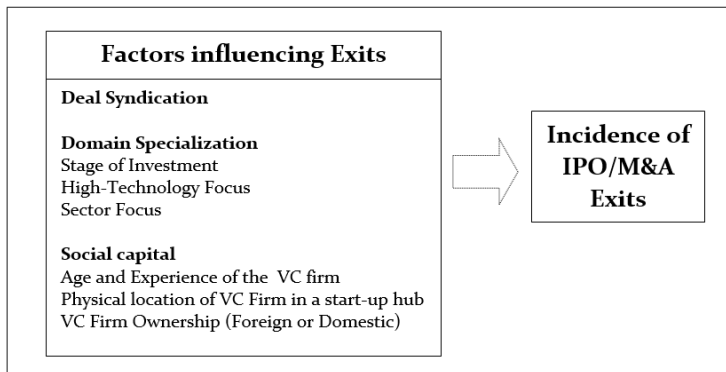


Figure 1 Proposed model of VC exits

Our basic premise is that profitability of exits (as indicated by IPO and M&A exits) is related to the overall magnitude of agency risks such that VCs who are more adept at resolving agency risks are likely to experience a higher incidence of profitable exits.

2. Propositions

2.1 Syndication - Agency Risks and Incidence of Profitable Exits

VCs are often pressurized to make the quickest return in possibly the shortest timeframe, which can be attributed to the intense pressure on the fund managers to raise successive VC funds. This drives a VC firm to time exit events so as to accelerate positive returns and to delay negative returns (Bartlett, 2006). Owing to syndication, a VC who invests in a start-up company faces a discernible risk that it may disagree at some point with the company's other VC investors concerning what constitutes a proper exit event (Bartlett, 2006). Thus, syndicating with other VCs often results in enhanced agency risks. On the contrary, syndication also reduces agency risks for VC investors in a variety of ways. By co-investing with other investors, a VC investor reduces its exposure to the firm-specific agency risk it would otherwise bear if it made the entire investment on its own (Bartlett, 2006). At

the same time, syndication helps VC investors diversify their investment portfolios. Additionally, syndication by facilitating better selection and monitoring of deals plays a critical role in reducing the information asymmetries inherent in VC investment. Thus, there are indications that syndication can either deter or enhance the chances of a profitable exit (IPO/M&A).

Based on the above, we advance proposition 1:

Proposition 1: Co-investing with other VC firms enhances the prospects of an IPO/M&A exit (Syndication with other VC firms is known to better mitigate the adverse selection and agency risks associated with the investee ventures. Their collective network is also critical from the viewpoint of enhancing the pool of prospective buyers.)

2.2 Domain Specialization - Agency Risks and Profitable Exits

Conventional finance theory propounds the existence of positive relationship between the risk of an investment and the return required by the investor. However, owing to diversification, the overall risk of a diversified VC portfolio will be much lower as compared to the average of its individual investments (Manigart et al., 2002). Thus, the commensurate return from a well-diversified portfolio is also expected to be much lower. On the contrary, the return required for a less-diversified portfolio of investments will be significantly higher (Norton and Tenenbaum, 1993). Hence according to the conventional finance theory, the greater the specialization of the VC firm portfolio (by stage, sector, technology or focus market), the more the outcomes of the investments are likely to be correlated with each other. Thus, the resulting risk will be higher and will accordingly require a higher return to compensate for the same as compared to a non-specialized VC firm.

Resource-based theories predict exactly the opposite. The resource-based view characterizes the firm as a collection of tangible and intangible resources (Barney et al., 2001; Chandrashekar and Bala Subrahmanya, 2018). The VC firms that specialize in a certain domain allow VC managers to gain a better understanding of the specifics. This deeper knowledge allows them to make better investment decisions as compared to a non-specialized VC firm. Their superior understanding facilitates both - assessment of inherent risks and monitoring of investee companies; consequently reducing business risks (Manigart et al., 2002). This implies that a specialized VC firm will require a lower return for an investment in their area of specialization. Based on the above discussion, domain specialization (by Funding Stage, Sector and High-Technology Focus) can possibly lead to both - a greater or a lower incidence of profitable exits viz. IPOs and M&As.

Based on the above we advance propositions 2, 3 and 4:

Proposition 2: VC firms focused on funding early-stage companies are less likely to witness IPO/M&A exits. (The magnitude of information asymmetry associated with early-stage deals is usually quite high and often difficult to resolve owing to the nascence of such ventures).

Proposition 3: VC firms focused on funding ventures in High-Technology domains are less likely to have IPO/M&A exits (Ventures in high-tech domains have huge information asymmetry due to the intangibility of assets that are often difficult to value and liquidate).

Proposition 4: VC firms focused on funding social sectors are likely to experience a lower proportion of IPO/M&A exits (Social sector focused ventures are often located in distant second-tier towns. Among other factors, geographical distance makes it difficult to resolve agency risks)

2.3 Social Capital - Agency Risks and Incidence of Profitable Exits

Social capital is a form of non-economic knowledge and is distinct from human capital. Social capital refers to the relational and structural resources attained by leveraging the network of social relationships (Mosey and Wright, 2007). Thus, a critical source of social capital is an individual's social network. Networks provide a conduit for the exchange of information and resources that allows VC firms to gain access to opportunities and resources, save time, and tap into advice and moral support that may otherwise be unavailable. In the VC industry, where information on deals is rarely public, social capital in the form of inter-firm relationships is likely to play a crucial role in granting access to better quality deals (Sorenson and Stuart, 2001).

The age of the VC firm and its investment experience in a certain geography, is an important proxy for its level of social capital (Huang and Khanna, 2003). Prior experience in the VC industry is likely to significantly enhance the contacts with the VC-entrepreneurial ecosystem thus augmenting the level of social capital and making the VCs adept in selecting and supporting their investees (Zarutskie, 2010).

Additionally, the presence of a vibrant ecosystem in terms of the presence of incubators, accelerators, business angels and incubated companies (Joshi and Satyanarayana, 2014) is an important factor considered by the VC firms in determining their geographical location. Co-location with other elements of the ecosystem enhances their social capital or compensates for lack of the same. The social capital endowment thus has a vital role to play in effecting the incidence of profitable exits. Thus, VC firms with higher level of social capital are likely to experience greater IPOs/M&As.

In general, foreign VC firms are known to possess limited social capital in the form of networks while investing in locations that are distinctly different from their origin (Devigne et al., 2013). This can possibly negatively influence their incidence of profitable exits. However, foreign VCs in India are also

known to have deep pockets that enable them to wait much longer before they find an appropriate avenue for a profitable exit (Joshi, 2015).

Based on the above, we advance propositions 5 and 6:

Hypothesis 5: More experienced VC firms have better prospects of IPO/M&A exits. (VC firms that have greater investment and portfolio management experience can better resolve information asymmetry risks).

Hypothesis 6: VCs that are physically located in vibrant start-up entrepreneurial-VC ecosystem hubs have higher likelihood of IPO/M&A exits. (The formal and informal networks among VCs and entrepreneurs enable the former to better mitigate information asymmetries)

Hypothesis 7: Foreign VC firms have better prospects of IPO/M&A exits as compared to their domestic counterparts (Given the fact that they invest in later stage companies, the resultant information asymmetries are much lower in magnitude).

V. Research Design

This section describes the research design and the methods of analysis adopted for the purpose of this study. A description of the data, the sample, description of variables and their definitions, modes of data collection and the methodology used are presented below.

1. Sample and Data

As discussed earlier, the purpose of this study is to understand the underlying characteristics of VC firms that translate to IPO and M&A exits. This is because of two reasons: one, empirically these are understood to be the most profitable exits, two, we have the information pertaining to only these two types of exits in our dataset. Thus, any other form of exits (viz. Re-Finance, Re-purchase, Write-offs) is subsumed under the category that is complementary to IPO/M&A exits. It must be also noted here that the data pertaining to write-offs (for start-ups) are currently unavailable in the Indian context.

This study is based on secondary data obtained from the Venture Intelligence database (2014). These secondary data are available from the year 2004 onwards. Unit of analysis for this study is an individual VC firm. The 72 VC firms in our sample have funded more than 85% of the deals during the period under study. For this analysis, we have considered only those VC firms that have been in operations for about 3 years and have funded at least 6 deals. This is aimed at controlling for the ‘time to exit’ and ‘intention to exit’. Owing to

the above controls, these factors are likely to get averaged out across the concerned VC firms. Further details on each of these variables have been given in the next sub-section.

All analyses were performed using SPSS 21.0.0.0 software. In our analysis, we used the logistic regression procedure to model for the likelihood of IPO/M&A exits. Since, there have been very few instances of IPO exits from VC funded firms in India so far, we model for IPO/M&A exits put together as a single category. For the same, we report the Model Chi-Square statistic, -2 Log Likelihood values, Pseudo-R-Squared values (Nagelkerke R-Square), Hosmer - Lemeshow Goodness-of-Fit values, percentage of correctly classified pairs and Wald-Chi-Square values corresponding to each β coefficient.

2. Variables

We use the following variables in our analysis:

Logistic Regression (Dependent Variables): The dependent variable is a dummy variable - which takes the value 1 if the VC firm has had at least at least one IPO or M&A exit till date and 0 otherwise (i.e. if the VC firm under consideration has witnessed neither IPO or M&A exits).

Logistic Regression (Independent Variables): The predictor variables in the regression models are as follows: VC firm profile related variables viz. Stage focus (early vs. later), High-Tech focus (high tech domains vs. otherwise), ownership type (foreign vs. domestic), Social-sector focused VC firms, VC firm age (number of years of operations in India), Physical location of the VC firm in India, proportion of syndicated deals and so on.

3. Methods of Analysis

To start with, the dependent variable for this analysis (in its original raw form) pertained to the proportion of IPO/M&A exits corresponding to each VC firm. The dependent variable defined in this manner, is continuous but bounded between 0 and 1. A survey of literature in this regard reveals that, when the dependent variable is of the type described above, one needs to take recourse to one of the following methods (Long, 1997; Woolridge, 2012).

We can regard the data as continuous and build an OLS regression model.

Treat the proportion as a binary response, and then run a logistic regression. This will only work if the proportion can be clearly thought of and if sufficient data is available on the number of successes and the total number of trials (Long, 1997).

Transform the dependent variable (such that it takes values between $-\infty$ and $+\infty$) and build an OLS regression model.

However, using the first method (i.e. OLS regression procedure), in cases where the dependent variable is truncated (as in our case, where it varies between 0 and 1), is likely to result in biased and inconsistent estimates (Long, 1997; Gujarati, 2012; Wooldridge, 2012). Hence, in our context, we find it more relevant to build a logistic regression model. Moreover, in our case, we could arrive at a logical rationale for categorizing the dependent variable (firms with at least one successful exit or otherwise). Alternatively, we could have transformed the dependent variable such that, it varies between $-\infty$ and $+\infty$, and then built an OLS model. We tried doing the same, however since the results obtained therein were not strong enough, we do not report them here.

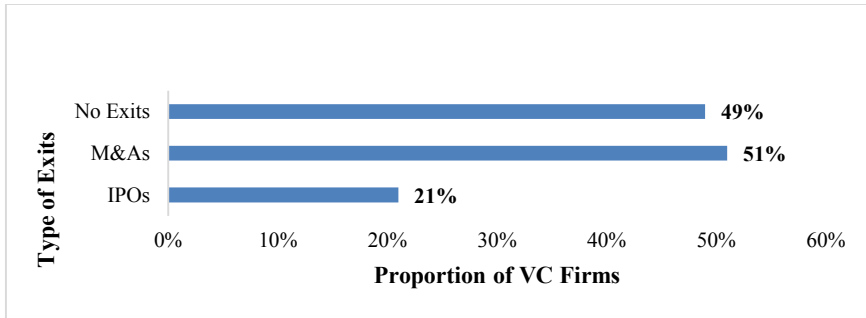
VI. Profile of VC Firms with Successful Exits

It is important to analyze the profile of VC firms with IPOs and M&A exits since it provides an insight into the determinants of the underlying agency risks. Accordingly, the VC firms from our sample have been analyzed with respect to the following relevant attributes - Funding Stage Focus (early vs. later), Ownership Type (domestic vs. foreign), High-Technology Focus, Social Sector Focus of a VC Firm, Age of a VC firm, Syndication and physical location of a firm in India. For geographic location, we chose Bangalore as that is regarded as the start-up capital of India.

1. Distribution of IPOs and M&As

The distribution of IPO and M&A exits has been presented in Figure 2. From Figure 2, it can be seen that about 49% of the VC firms in our sample have not experienced even a single IPO or M&A exit so far. About 21% of them have experienced at least one IPO exit while about 51% of them have witnessed at least one M&A exit. Thus, in general, the incidence of exits via the IPO route is much lower as compared to that via the M&A route.

The apparent dominance of the M&A exits over those via the IPO route could be possibly attributed to the stringent listing requirements of the major stock exchanges in India. Typically, the listing requirements of Indian stock exchanges have not been quite amenable to the listing of contemporary start-up firms. They often impose stringent listing requirements in terms of the paid-up capital by the promoters and are also known to have arbitrary rules such as the proceeds from a public listing to be used to build tangible assets or invested in only plant and machinery (Planning Commission, 2012; Economic Times, 2015). Since, most technology businesses cannot necessarily meet such requirements, IPO exits have been quite rare for them.



Note: A VC firm may have experienced more than one type of exit. In that case it is counted in both exit types (IPO and M&As). Consequently, the sum of exits in Figure 8.1 adds up to greater than 100%.

Figure 2 Distribution of successful exits

2. IPO and M&A Exits and Funding Stage Focus

Figure 3 presents the distribution of successful exits across the funding stage focus of the VC firm. From Figure 3, it can be seen, that in general, among VC firms with an early-stage focus, the incidence of successful exits is much lower as compared to the later stage ones. Both IPO and M&A exits for the early-stage focused VC firms are significantly lower than that of their later stage counterparts.

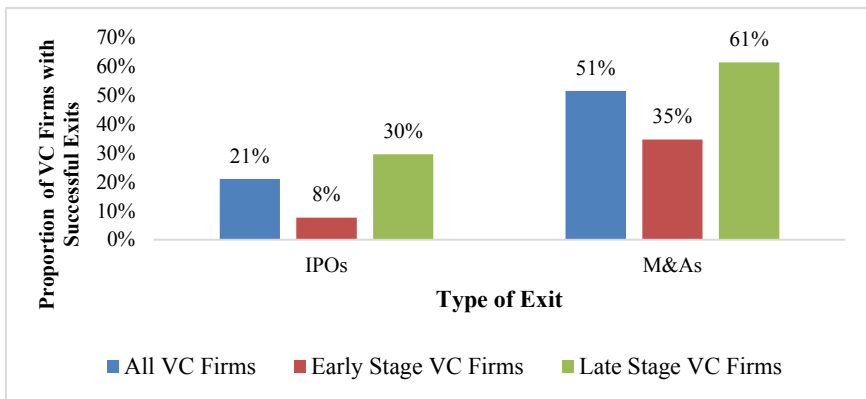


Figure 3 IPO and M&A exits and funding stage focus

Among the IPO exits in particular, about 21% of all VC firms have witnessed at least one IPO exit. However, only about 8% of the early-stage focused VC firms have experienced the same as compared to that of 30% for the late-stage focused VC firms. Similarly, only about 35% of the early-stage VC firms have exited via the M&A route as compared to the overall average of 51% for the sample. On the other hand, about 61% of the later stage VC firms have exited using this route.

3. IPO and M&A Exits and VC Firm Ownership Type

Figure 4 presents the distribution of successful exits across the nature of ownership of the VC firm.

From Figure 4, it can be observed that about 32% of foreign VC firms have experienced at least one IPO exit as compared to the overall sample average of 21%. The same is only about 14% for domestic VC firms. Similarly, about 68% of the foreign VC firms have witnessed M&A exits for the deals funded by them as compared to that of 40% for domestic firms.

From this, it may be concluded that foreign VC firms in general, are likely to experience a higher proportion of IPO and M&A exits as compared to their domestic counterparts.

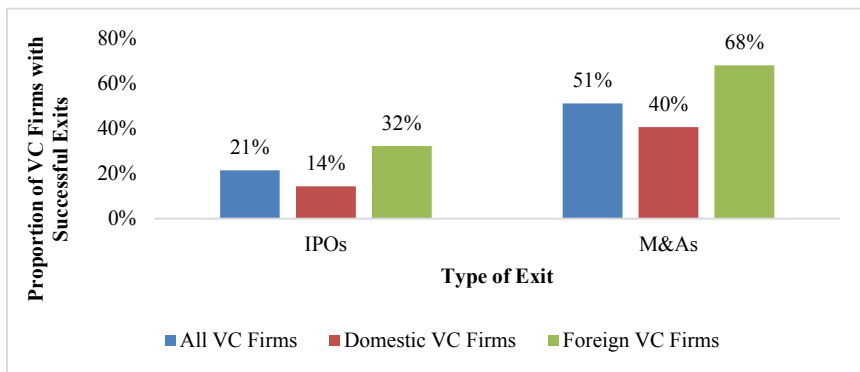


Figure 4 IPO and M&A exits and VC firm ownership type

4. IPO and M&A Exits and High-Technology Focus

Figure 5 shows the distribution of exits by the high-technology funding focus of the VC firm.

From Figure 5, it can be observed that the incidence of IPO and M&A Exits is un-uniformly distributed across the technology - focus of the VC firms.

About 15% of the VC firms with a high-tech focus have experienced an IPO exit, which is lower than the sample incidence of 21%. However, about 59% of the same have witnessed M&A exits, which is above the sample incidence of 51%.

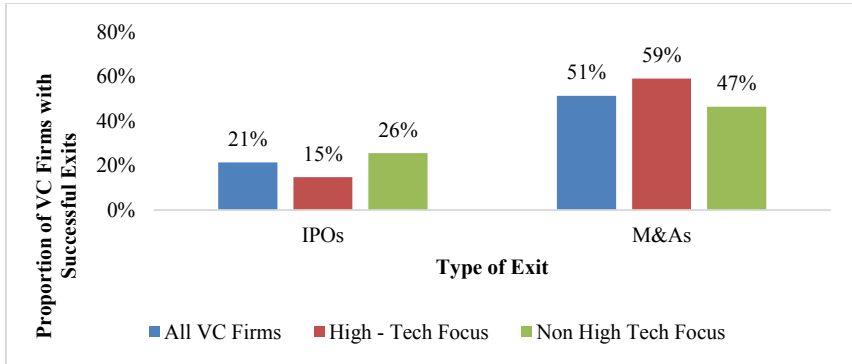


Figure 5 IPO and M&A exits and high-technology investment focus

From this, it may be concluded, that the high-tech focused VC firms do not uniformly experience higher success rates. They are likely to witness more successful exits via the M&A route as compared to the IPO channel.

5. IPO and M&A Exits and Age of the VC Firm

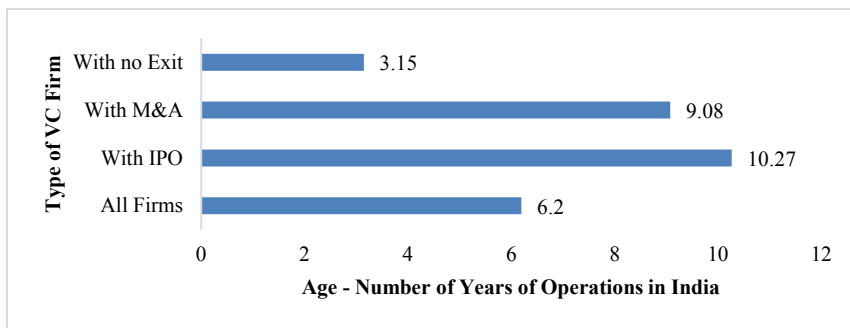


Figure 6 IPO and M&A exits and age of the VC firm

Figure 6 shows how the IPO and M&A exits are related to the age of the VC firm. Age of a VC firm is computed as the number of years of operations in India. It can be seen that the average age of operations of all VC firms in our sample is around 6.2 years. However, those with no successful VC exits so far are much younger at 3.1 years while those having witnessed a successful exit

(either IPO or M&A) are much older - with an experience of about 9 to 10 years of VC investing in India.

6. IPO and M&A Exits and Physical Location of the VC Firm

Physical location of the VC firm is a proxy for a lot of essential elements that are instrumental in driving profitable exits. Among these, one of the most essential attributes is the presence of social networks. Unlike, the listed companies, most details of VC funded companies are privately held. Informal networks in particular are likely to play a vital role in resolving the information asymmetries during the exit phase particularly in case of exits via the M&A route. Naturally, VC firms tend to locate themselves in cities that have deeper networks. Bangalore given its prominent position as one of the most vibrant global information technology and start-up hubs seems to be just the right location for both VCs and entrepreneurs.

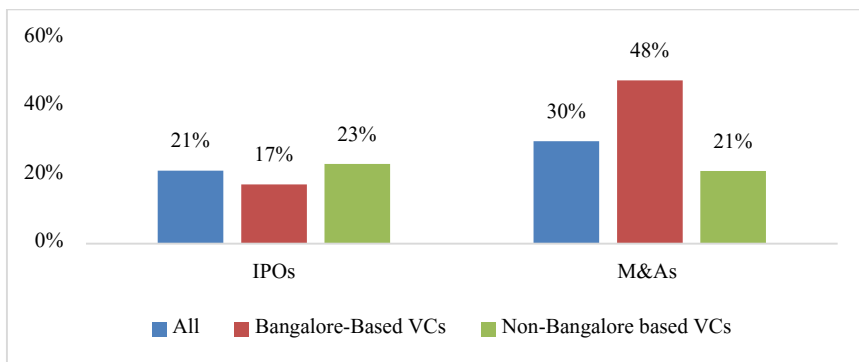


Figure 7 IPO and M&A exits and physical location of the VC firm in Bangalore

From Figure 7, it may be seen that Bangalore based VCs rank the highest in terms of M&A exits (48% of the Bangalore based VCs have experienced M&A exits as compared to that of 21% Non-Bangalore-based ones). This clearly brings out the critical role of networks. In case of IPO exits, networks might not be as important as thus the non-Bangalore based VCs rank marginally higher in terms of IPO exits (21% of the non-Bangalore based VCs have experienced IPO exits as compared to that of 17% for Bangalore-based ones).

7. IPO and M&A Exits and Syndication

Syndication refers to co-investment in a deal by multiple VC firms. By pooling in information VCs with syndicated deals are better able to resolve information asymmetries, resulting in greater prospects of successful exits

From Figure 8, it can be seen that VCs with zero syndicated deals have a lower incidence of both IPO and M&A exits. Among VCs that co-investment with other peer VC firms, the incidence of IPO exits is 25% while that of M&A exits is 37%. On the contrary, for VCs with zero syndication, the incidence of IPO exits is just 8% while that of M&A exits is 0%.

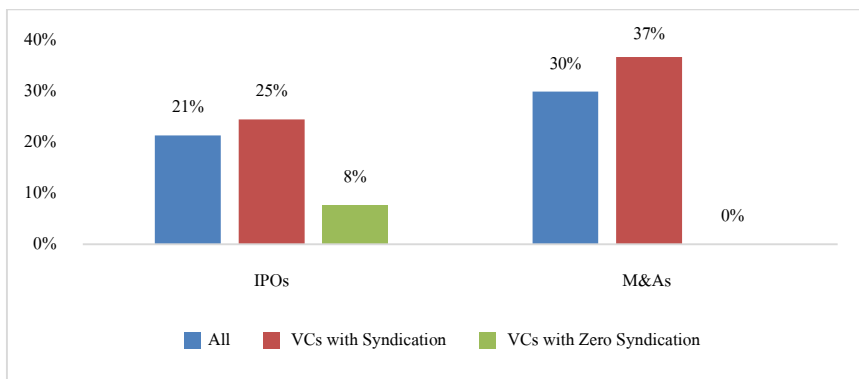


Figure 8 IPO and M&A exits and syndication of the VC firms

8. IPO and M&A Exits and Social Sector Focus of VC Firms

Figure 9 shows the relationship between the incidence of successful exit and the social sector focus of the VC firms. Of late, there has been a great focus on impact investing which has seen the emergence of many VCs that fund deals with a social sector-focus. These include funding ventures in the arenas of clean energy, agro-innovation, sanitation and hygiene and most importantly financial inclusion. One of the significant features of companies in these domains is that they are overwhelmingly based in second-tier towns (Venture Intelligence, 2014). Greater geographic distance between the VC and the investee firm is one of the important determinants of information asymmetry (Joshi, 2016). It is well documented that VCs try to locate as close as possible to their investee ventures to resolve agency risks.

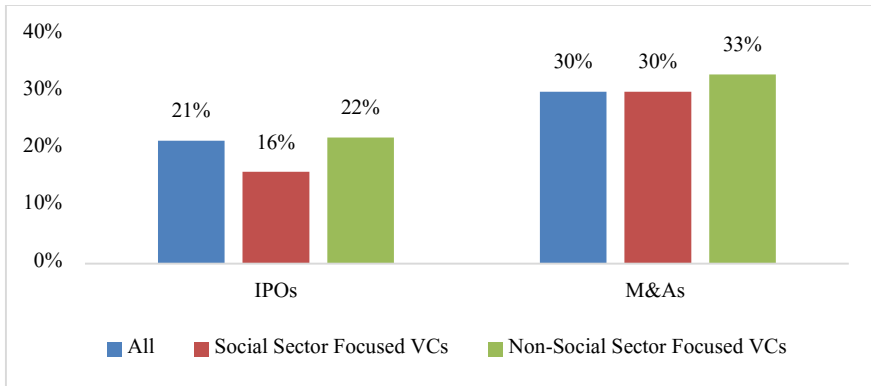


Figure 9 IPO and M&A exits and social sector focus of VC firms

Given, the magnitude agency risks, the VC firms that are social sector focused are likely to witness a lower proportion of profitable exits. From Figure 9, it can be seen that only 16% of social sector focus VCs are likely to witness IPOs and 30% M&A exits. On the contrary, among the non-social sector focused VCs, the incidence of IPO and M&A exits is 22% and 33%, respectively.

VII. Discussion

This section comprises two sub-sections. To start with, we present the preliminary data analysis, viz. bi-variate correlations among the model variables. Next, we present the results from the Logistic regression models.

1. Preliminary Data Analysis

Table 1 presents the bi-variate correlations among the model variables.

From Table 1, it can be seen that there exist significant correlations among the model variables. Hence, severe multicollinearity issues would have been encountered were these variables used in a single model. Hence, we decided to build separate models to capture the effects of the relevant variables.

Table 1 Bi-Variate correlations

	1	2	3	4	5	6	7	8
1	1	-.418**	-.259*	.268*	.124	.629**	-.009	.193
2	-.418**	1	.165	-.165	-.152	-.324**	-.146	-.256*
3	-.259*	.165	1	-.205	.423**	-.308**	-.024	.029
4	.268*	-.165	-.205	1	.132	.083	.063	.174
5	.124	-.152	.423**	.132	1	-.164	-.243*	.258*
6	.629*	-.324**	-.308**	.083	-.164	1	.149	.099
7	-.009	-.146	-.024	.063	-.243*	.149	1	-.106
8	.193	-.256*	.029	.174	.258*	.099	-.106	1

Note: Correlation is significant at the 0.05 level (2-tailed)**. Correlation is significant at the 0.01 level (2-tailed).

Legend: 1 = Dependent Variable – IPO/M&A Exits, 2 = Indicator Variable - Syndicated Deals, 3 = Early-Stage Focus, 4 = Indicator Variable - Foreign VC Firm, 5 = Indicator Variable - High Technology Focus, 6 = VC Firm Age, 7 = Indicator Variable - Social VC Firm, 8 = Indicator Variable – Location – Bangalore.

2. Discussion of Results

We build the logistic regression models to analyze the incidence of IPO or M&A exits. For this analysis we do not model for the IPO and M&A exits separately. Rather these have been clubbed together and modeled as profitable exits.

The dependent variable for the logistic regression takes the value of 1, if a VC firm has witnessed at least 1 IPO or M&A exit. It takes the value 0 if none of these two types of exits is encountered. Thus, active deals, write-offs, re-finance exits and re-purchase exits have all been clubbed together in the 0 category. We admit that this is a limitation of our approach and can potentially hinder us from obtaining sharper results. However, given the fact that we did not have information pertaining to the other exits (write-offs, re-finance and re-purchase) in our dataset, it was not possible to separate them out from the other active deals.

The results from the Logistic models have been presented in Table 2. From the model diagnostics presented in Table 2, it may be stated that the model results are fairly robust. For the Logistic regression model - F-statistics is significant, p-values corresponding to the Hosmer-Lemeshow goodness-of-fit statistic are high and % of pairs correctly classified above 65%.

Among the model variables, syndication emerges significant. The indicator variable viz. ‘absence of syndication’ (zero syndicated deals) exhibits a negative relationship with the incidence of an IPO/M&A exit. This implies that syndicating with other VC firms enhances the likelihood of profitable exits. The underlying reasons for the same could be explained as follows:

syndication is known to enhance the level of due diligence associated with the initial investment in the investee firm (Cumming and Johan, 2010). By checking each other's willingness to invest in potentially promising deals, VC firms can pool correlated signals and thereby select better investments in situations of extreme uncertainty about the viability and the return potential of investment proposals (Sah and Stiglitz, 1984; Hochberg et al., 2007). Moreover, individual VC firms tend to have investment experience that is both sector and location specific. Thus, syndication helps diffuse information across sector boundaries and expands the spatial radius of exchange thus allowing VC firms to diversify their portfolios (Sorenson and Stuart, 2001). In addition, syndication networks may help VC firms add value to the investee companies (Hochberg et al., 2007). Moreover, syndicates are known to make exit easier for successful start-ups as it increases the pool of contacts required to make M&A possible.

Having well-established VC firms in the syndicate is known to facilitate the IPO process as well through enhanced certification (Giot and Schwienbacher, 2007). All of the above indicate that syndication is one of the most potent methods to reduce the magnitude of agency risks. Thus, in general, VC syndication has been shown to be associated with higher returns (Brander, Amit and Antweiler, 2002; Nahata, 2008).

Next, we find that VC firms focused on funding early-stage deals are less likely to have IPO/M&A exits. Typically, the degree of information asymmetry varies inversely with the firm's stage of development. Accordingly, the early-stage firms have the highest level of information asymmetry and accordingly agency risks associated with them (Cumming and Johan, 2010). The quality of management and the soundness of the firm's product/technology are often untested at the seed-stage. Despite the VC firms' expertise in resolving information asymmetries, it seems inevitable that the valuation errors will be much greater for early-stage investments (Cumming and Johan, 2010; Nahata, 2008). This kind of riskiness associated with early-stage investments adversely impacts their performance (Nahata, 2008). Accordingly, the early-stage focused VC firms are found to experience a lower incidence of IPO/M&A exits.

In the Indian context, early-stage firms cannot easily take the IPO route as there are minimum listing requirements based on the scale of the business and historical record of profitability (Joshi, 2015). The above regulations rule out the listing of early-stage firms on India's major bourses viz. BSE and NSE. However, SEBI has also started the SME trading platforms for listing the start-ups since. But these are yet to gain traction and thus no start-up worth its name has listed on these new trading platforms. Thus, the lower incidence of IPO exits for early-stage start-ups in India is mainly owing to the above reason than anything else. However, in the context of M&A exits for early-stage firms, the

agency risks argument still holds. Naturally, their incidence of exits via the latter route is lower.

Table 2 Logistic regression model output

Dependent Variable: IPO/M&A Exits = 1 (if at least one IPO/M&A Exit witnessed by a VC firm); IPO/M&A Exits = 0 (no IPO/M&A exit witnessed by a VC firm)						
Number of Observations = 70						
VC Firm Profile Related Variables	Model 1		Model 2		Model 3	
	B	Exp(B)	B	Exp(B)	B	Exp(B)
Early Stage of Funding	-1.667 (5.495**)	0.189			-.985 (3.088*)	0.373
High-Technology Focus	1.309 (3.379*)	3.704				
Age of VC Firm			.796 (20.152***)	2.217		
Social VC			-2.330 (3.681*)	0.097		
Syndicated Deals					-2.868 (6.975***)	0.057
Constant	-.115 (.085)	0.891	-4.066 (16.798***)	0.017	.812 (5.467**)	2.253
Model Statistics						
Nagelkerke R Square	0.214		0.675		0.288	
Cox and Snell's R Square	0.161		0.506		0.216	
-2 Log Likelihood	84.711		47.626		79.929	
Model Chi-Square Statistic	12.273 with 3 Degrees of Freedom. P-value=.007		49.357 with 2 Degrees of Freedom. P-value=.000		17.054 with 2 Degrees of Freedom. P-value=.000	
Hosmer - Lemeshow Goodness of Fit Statistic	3.792 (P-value=.580)		9.957 (P-value=.191)		0.538 (P-value=0.764)	
% Correctly Classified	68.6		82.9		68.6	

Note: * Indicates significance at 10% level, ** Indicates significance at 5% level, *** Indicates significance at 1% level

Further, we find that the VC firms having a *high-technology focus* have a greater likelihood of IPO/M&A exits. This finding is quite contrary to what has been observed in the case of other related empirical studies. It has been found that, in general, the incidence of success is much lower for firms in the high-tech domains. The underlying reasons for the same are manifold. As such, the high-tech firms are characterized by a greater level of information asymmetry as compared to the ones in the more conventional domains resulting in greater agency risks. Usually, the more sophisticated or innovative the technology, fewer will be the potential buyers who understand it well and

hence value it appropriately. Accordingly, the risks associated with mis-assessment are likely to be higher. Moreover, the technology firms are also associated with high asset-specificity. Should technology fail, such firms are likely to have very low asset salvage value (Cumming and Macintosh, 2001). Consequently, high-tech firms are known to be associated with a high failure rate.

However, other studies also point out that, historically IPO investors have exhibited a greater appetite for technology firms (Cumming and Johan, 2010) as compared to the ones in non-technology domains. Besides firms in high-tech industries have higher market-to-book ratios and greater growth options and therefore more likely to go public (Gompers and Lerner, 2004). Alternately, the high-tech firms are known to possess significant transaction synergies with respect to bigger firms making M&A exits more viable (Cumming and Johan, 2010). In the case of India as well, the deals in the IT and ITeS sectors have witnessed good liquidity and high returns so far (Bain, 2014). Since, these sectors come under the purview of high-tech domains, it can be said with a fair degree of confidence that, in India as well, firms focused on high-tech domains have been found to witness more profitable exits. Nevertheless, it must be pointed that, in the Indian context, owing to impediments to listing technology companies on the stock markets, M&As and not IPOs have constituted a major portion of such successful exits (Bain Consulting, 2014).

We also found that the more experienced VC firms (as explained by their Age - years of operations in India) have a higher likelihood of IPO/M&A exits. Greater VC firm experience has been found to be positively associated with a high likelihood of an IPO (Giot and Schwienbacher, 2007). More experienced the VC firm, better is the initial deal screening process and also higher are the network effects (Black and Gilson, 1998; Hege et al., 2003). Such firms are also likely to add more value. For IPO exits in particular, experienced firms have better chances of building a strong IPO syndicate. Giot and Schwienbacher (2007) and Kaplan and Schoar (2005) have shown that the greater the experience of the VC firm, the more persistent are the returns across a sequence of funds managed by the same VC firm. Accordingly, VC reputation as measured by its age and experience in investing is naturally translated into more successful exits (Hochberg et al., 2007; Nahata, 2008).

Lastly, we find that VCs focused on social sector investments have lower likelihood of successful exits. In India, typically the companies funded by such VCs are likely to be located in second-tier towns. The language and cultural barriers for city-based VCs increase with the geographical and cultural distance from the funded investee firms. Geographical proximity between the VC and the investee firm is another potential indicator of riskiness. It is a proxy for the extent of monitoring that is possible. Since monitoring is critical

for reducing agency risks, lesser geographical distance is typically associated with lower risk (Sapienza, 1992; Lerner, 1995; Sapienza et al., 1996; Manigart et al., 2000; Sapienza et al., 2005; Cumming and Dai, 2010). Geographical distance not only impacts the agency risks but those emanating from adverse selection as well. In the VC industry, the information on investment opportunities is not public. Rather, it is only discretely available through organizational networks. A high geographic distance reduces the effectiveness of these channels and thus affects the ability of the VC firms to access high quality investment opportunities (Cumming and Dai, 2010). The impact of such risks resulting geographical distance between the social-sector focused VCs and the ventures funded by them are certainly likely to negatively impact the incidence of successful exits.

The variables on foreign VC firms and physical location of the firm in a vibrant entrepreneurial ecosystem did not emerge significant. To conclude, we establish propositions 1 to 5, but not propositions 6 and 7.

VIII. Conclusions

In this paper, we focus on the agency risks encountered by VC firms and their impact on the incidence of profitable exits (IPO/ M&As). We consider various parameters that proxy the underlying magnitude of agency risks and assess their impact on exits. The factors considered by us are Syndication, Specialization (viz. investment-stage focus, high-technology focus and) and social capital of the VC firm (age and experience of the VC firm, ownership type (Foreign vs. domestic) and the geographical location of the VC firm in a prominent IT and start-up cluster.

Our findings have important managerial implications and policy conclusions. For VC managers in particular, it is important to note that co-investing with other VC firms enhances their prospects of successful exits. Our findings show that early-stage firms have witnessed lower success rates for the ventures funded by them. However, other related results in the Indian context reveal that early-stage focused VC firms in India syndicate only to a limited extent (Joshi, 2015). From this, it is important for us to join the dots and draw appropriate inferences. While, these findings do not imply that co-investment alone would result in successful exits, yet the strong positive relationship between co-investment and venture success needs to be certainly acknowledged.

From the policy viewpoint in particular, we have two important propositions. Social capital and networks are the most important factors that determine the success of VC exits. The VC-entrepreneurial ecosystem plays a critical role in providing access to these networks to novice VC firms and nascent

entrepreneurs. Thus, in order to ensure the long-run viability of VC industry, it is important to focus on enhancing the quality and depth of the existing ecosystem. Further, our finding about the low success rate of the early-stage focused firms partially explains why a majority of the VC firms in India are hesitant to invest in the early stage companies. As observed by Planning Commission (2012), India substantially lags behind in the provision of early-stage funding as compared to its global peers. If private VC firms are not willing to come forward to meet this demand-supply gap in early-stage funding, the public sector needs to step-in here. In fact, this has been the underlying pattern the world-over wherein the government has played a key role in the provision of early-stage risk capital.

The other most significant policy change is warranted in the arena of facilitating exits of VC-funded companies via the IPO route. Based on the current SEBI regulations, it is extremely difficult for technology-focused companies to get listed on the Indian stock exchanges (BSE and NSE). Often these businesses are top-line based and not bottom-line based and hence do not have a historical track record of profitability - which is one of the pre-conditions for listing (SEBI, 2015). This needs to change and India needs to create an Over-The-Counter exchange on the lines of NASDAQ that facilitates the listing of these new economy companies. In this regard, the government has established SME exchanges in 2012 (Bala Subrahmanya, 2014), yet these exchanges suffer from the lack of liquidity owing to low business volumes. In 2015, SEBI has proposed setting up of Alternative Capital Raising platforms in this regard, however it is yet to gain traction.

Moreover, these ventures are not allowed to list directly in overseas stock markets (Planning Commission, 2012) prior to listing on Indian bourses. On the contrary, in China, VC funded companies are allowed to directly list on foreign stock exchanges. This step, by opening up superior avenues for exits, is likely to greatly enhance the liquidity and profitability of VC-funded companies. Alibaba - China's biggest E-commerce company, which was listed on the New York Stock Exchange in 2014, received a valuation of USD 231 Billion, more than that of Facebook, Amazon and eBay combined (Joshi, 2015). To sum up, Indian policy-makers need to seriously think about making more liquid and profitable avenues accessible to VC-funded firms, especially in the context of IPOs. Not only will such a move aid the latter, but it'll also enable the small retail investors to participate in the investment process and in turn share the profits of successful Indian start-ups.

There are several ways in which this study can be further improved. Two important extensions of this study would be to assess all kinds of VC exits and not just IPO and M&As. Secondly, the unit of analysis needs to be a VC - funded investee company and not the VC firm itself. Moreover, VC exits and the agency risks therein could possibly be better predicted by the relationship

between the VC firm and the entrepreneur. A better relationship may result in lower information asymmetry costs and a more successful exit strategy for the VC. This has not been captured by the current study. A few case studies done on the same approach can be conducted and incorporated in future studies in this domain.

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