Article

Impact of Venture Capital Investment on Firm Performance: An Indian Evidence

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Abstract

We evaluate the monitoring and certification hypotheses associated with venture capital (VC) investors involved with Indian listed firms having the potential to influence firm performance. Empirical results of our study do not support monitoring and certification hypotheses associated for VC investors involved in publicly listed firms in India. On the other hand, we find the evidence of value erosion due to the presence of VC investors. The negative effect is justified through the opportunistic behaviour of the investor having a very easy route to exit investment through the secondary market in case of expected underperformance of the firm. The study also reveals that the origin of VC investors does influence firm performance. The results have a significant impact due to the regulatory framework defining the portfolio of VC investors.

Keywords

Venture capital, firm performance, private equity, India

Introduction

The role of institutional investors' influencing firm performance has led to inconclusive results in the light of monitoring hypothesis (Agrawal & Mandelker, 1990; Demsetz, 1983; Duggal & Millar, 1999; Shleifer & Vishny, 1986; Wahal, 1996). The justification for observing a positive influence of institutional investors on firm performance is primarily due to a larger investment stake. As a result, institutional investors tend to closely monitor the firm's operation by improving the efficiency and performance. The counterargument for not supporting monitoring hypothesis is that most often the management prefers the allocation of equity to passive investors who do not intervene in the regular operations of the firm. In such cases, the investors tend to exit in anticipation of negative firm performance. These two different

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perspectives support active monitoring hypothesis and private benefit hypothesis associated with the investment by institutional investors. The active monitoring hypothesis is supported through multiple managerial and strategic roles played by the institutional investors. Most often institutional investors are actively involved in the corporate boards and perform the role of active monitoring. They also try to acquire control of the firm (Pichhadze, 2010). It is also observed that the involvement of the VC investor has a significant influence on the corporate governance of the firm through controlling the constitution of the corporate board. VC firms experience less dominance of insider involvement on the board indicating that VC investors prefer more independent boards (Bouresli, Davidson & Abdulsalam, 2002).

The extant literature evaluates the generic role of institutional investors. However, the typology of institutional investors also differs significantly based on their investment objective. This study is aimed at evaluating firm performance based on the investment of VC investors after the listing of the firm. The reasons are derived from well-documented literature that supports the certification effect associated with VC investors and monitoring hypothesis which can be potentially true for all types of institutional investors. The VC investors are also associated with the grandstanding phenomenon, where the liquidation of existing funds that flows back to create new investment opportunities for VCs is also very important. However, the extant literature has validated this phenomenon associated with VCs only in the context of exit through initial public offerings (IPOs). These phenomena have not investigated in the context of an emerging market. This study contributes to the existing literature by evaluating the certification and monitoring effect associated with VCs and its involvement even after the listing of the firm in the Indian market.

The remaining article is organized as follows. In the next section, we present the review of literature followed by objectives and the rationale of the study. In the following section, we provide methodology. Further, we explain the empirical analysis followed by conclusion. At the end, we provide the managerial implication of this study, limitations and the future scope of research.

Review of Literature

As institutional investors, the role of VC investors is prominent since inception of the firm. Being involved in the regular operational activity of a firm at an early stage, the private equity (PE) investors are well informed and expected to have a lower degree of information asymmetry between PE firm and an investee firm. The monitoring activity of PE investors and the certification effect associated with PE investors signal firm quality and enhance firm performance in the capital market. In this process, PE investors are forced to incur monitoring costs to safeguard their investment.

The certification effect associated with VC investors is validated by Megginson and Weiss (1991) at the time of the issuance of IPO. They find the support that VC-backed IPOs are successful in reducing the cost of going public and maximizing the issue proceeds. They also reveal that VC investors retain a significant portion of the shares even after IPOs.

Demsetz (1983), Shleifer and Vishny (1986) and Agrawal and Mandelker (1990) find strong evidence of active monitoring by institutional investors that influences firm performance. This influence is found to be positive even after issuing private placement of equity to the institutional investors (Wruck, 1989; Hertzel & Smith, 1993; Wruck & Wu, 2009). Contrary to their evidence, Wu (2004) and Barclay, Holderness and Sheehan (2007) did not find empirical support for monitoring the hypothesis and revise the discussion to support managerial entrenchment.

The study by Stotz, Wanzenried and Döhnert (2010) reveals that PE investors make an investment in the public equity of listed firms in their home country through open market operations. It results in

increase in return on the equity of a firm in the home country which justifies home bias observed with PE investment. Their results also support monitoring hypothesis where PE investors influence management decision. It creates wealth effect in the short term as well as in the long term (3 years). Tykvova and Borell (2012) analysed European buyout firms and compared them with non-buyout firms from 2000 to 2008. The results of their study reveal that PE firms invest in the firms that are less financially distressed, and investment by experienced PE investors helps in reducing bankruptcy cost. These studies make it evident that the PE investors discipline their funds based on different conditions which require a greater degree of due diligence.

Since PE investors are blockholders, their monitoring activity is likely to reduce the opportunistic behaviour of the managers of the investee firm and indirectly help in reducing the agency cost. The VC investors are likely to influence a firm's performance through corporate governance. There are significant differences in the board structure of firms with VC investment and non-VC investment. The VC-backed firms exhibit a more independent board structure, an audit committee and a compensation committee. Their boards include a larger proportion of outsiders and are not dominated by insiders. The involvement of PE firms in the form of leverage buyouts generates a large amount of cash flow required to fulfil debt obligation. The failure of the fulfilment of such an obligation results in having complete firm control with PE managers. In such a situation, they are likely to replace the chief executive officer (CEO) and continuously monitor most of the operational activities, resulting in lowering the agency cost (Hochberg, 2012). The cross-country comparison of PE investment across six countries—the USA, the UK, France, Spain, Germany and Sweden—by Bonini, Alkan and Salvi (2012) revealed that the involvement of PE fund has a positive influence on the appointment of the CEO, employee incentives, executive compensation, the constitution of the board and its decision-making process. While analysing the American and European PE-invested firms, the difference is observed in the various decision-making aspects of corporate governance. European companies show a significant influence of PE investors in determining the investment portfolio whereas the American data set shows that the involvement of PE investors influences executive compensation, the constitution of the board and its decision-making process. This study supports that in addition to capital infusion, the PE investors do influence the governance structure of the firm and contribute towards value addition.

The situation is significantly different in emerging economies. If the foreign PE funds are trying to identify the investment opportunities in an emerging market, it requires a greater degree of due diligence related to various macro-economic factors. Most often they tend to look for local general managers for the syndication purpose so that the target company can be well understood in a given economy. Groh and Liechtenstein (2012) have empirically assessed the country-specific attractiveness in various emerging markets. The important determinant of PE investment in emerging economies is labour market, growth prospective, the level of corruption, bureaucratic structure, the entry barrier and crime level. The decisions related to macro-economic parameters are assessed a priori. Once the target country is decided, then the micro-level factors such as industry, governance structure and other capital market-related parameters play an important role in investment decision.

The empirical evidence by Hochberg (2012) and Bonini et al. (2012) clearly indicates that PE investment influences the governance parameters of an investee firm. These studies are based on a premise derived from the monitoring hypothesis where institutional investors including PE investors perform monitoring activity to improve firm performance.

In an emerging market, the laws of shareholders' protections are weak, and the institutional void theory identifies that emerging markets have limited resources to increase its economic efficiency. Even the capital markets have limited breadth and depth of various financial instruments. Most of the businesses are family owned, and the ownership stake is concentrated with a single family. With these

characteristics, block investors in the emerging markets, most often institutional investors, are likely to find the need of active monitoring to protect their interest from the investment. The support of monitoring hypothesis and certification hypothesis associated with PE investors is likely to be different for emerging and developed markets. In addition to the monitoring and certification hypothesis, the grandstanding phenomenon associated with PE investors is also important. Grandstanding determines the liquidity of funds and reinvestment in new investment opportunities (Gompers, 1996).

In India, the operation of venture capital fund (VCF) is governed by the VCF regulation, 1996.[1] Similarly, foreign venture capital (FVC) funds are governed by Foreign Venture Capital Investor Regulations, 2000.[2] These regulations are amended as and when required by the Indian regulatory body. The Indian capital market regulator—Securities and Exchange Board of India (SEBI)—demands every VCF to register either in the form of trust or in the form of a company. Fund creation is typically through the pooled funds from financial institutions, corporations and high net-worth individuals. The VCF operations should not be listed on a recognized stock exchange and are not allowed to carry any other activity except VCFs. Similar to fund creation, VCFs also have a restriction on the investment decisions. VCF cannot invest more than 25 per cent of the fund in a single venture. This clause discourages one to hold the ownership for obtaining majority control. At the time of registration, VCFs should disclose their investment strategy. VCs are required to invest at least 66.67 per cent of the funds in unlisted equity capital. This leaves out 33.33 per cent of the funds for VCs which should be invested in equity securities subscribed through IPO. The VCs can also invest in equity shares through preferential allotment which is locked in for a year. VCs are also conditioned to invest in the equity of financially weak companies.

In addition to the investment restriction, the VCs are also prohibited from listing up to 3 years from the issuance of its venture fund units. Therefore, this restriction prohibits the venture fund to raise funds through the public. The VCs are also restricted from issuing any document or an advertisement for inviting purchase or subscription from the public. Because of this reason, the grandstanding hypothesis is important which evaluates fund efficiency by obtaining the liquidity to existing investment and flowing the money back into the fund to support the new investment opportunities. The fund is expected to maintain fair records and books of those that reflect the current status of the fund. The regulator withholds the power of calling upon the VCF for any kind of information related to its activity.

The aforementioned regulations are similar for the FVC fund except that the FVC requires approval from the Reserve Bank of India, the Central bank of India, for undertaking the investment in India. In addition, the entity that is going to register in India has to be incorporated outside India. The investment restrictions stay the same. However, the FVCs are required to have an agreement with a domestic custodian who is responsible for monitoring the investment funds and reporting the investment activities periodically to the regulator. Hence, in this study, we also verify the effect of domestic venture capital (DVC) as well as FVC to evaluate the effect of their role.

In an emerging market, shareholders' protection rights are weaker. In addition, these markets have very limited resources to increase its economic efficiency. Even the capital markets are not very well developed with various financial instruments. Most of the businesses are family owned, and the ownership stake is concentrated with a single family. With these characteristics, block investors/institutional investors in the emerging markets are likely to find the need of active monitoring to protect their interest from the investment. As a result, PE investors are likely to influence the performance of an investee firm.

Objectives of the Study

With the aforementioned review of literature and the regulatory framework associated with VC in the Indian market, the objective of our study is to validate monitoring, certification and the grandstanding

phenomenon associated with PE investors in the Indian equity market. The objective of our study is important in linking the role of PE investors on firm performance in which PE investment is observed. Based on the objective, our study evaluated the impact of PE investment on the market-based performance measures of the company. In the case of monitoring and certification impact, the well-reputed PE investors are likely to show a positive influence on the market return of the firm in which PE investment is observed. If it supports the grandstanding phenomenon, then the liquidation of the investment is on priority, which may not exhibit a positive impact on firm performance. With this objective, we carry forward this study in identifying the relationship between PE investment and firm performance.

Rationale of the Study

The institutional environment compels the VC investors to invest the majority of its stake in non-listed firms that encourage the monitoring activity of PE investors enhancing firm performance. In addition, VC investors are involved in firm operations prior to going public. Therefore, VC investors have a greater understanding of firm operations. Since they are blockholders, potentially, PE investors are involved in a monitoring activity that improves the performance of the investee firm.

The investment opportunities restricted by the Indian regulator for DVC and FVC investors do not show significant changes. However, based on the opportunities created in terms of future investment opportunities (in support of grandstanding), they may differ based on the origin of VC. Hence, we argue that the origin of VC investors may likely have a significant difference in determining the performance of the investee firm.

Methodology

Data Source

Data have been collected from the PROWESS database maintained by the Centre for Monitoring Indian Economy (CMIE). PROWESS is a database that provides financial data and performance of Indian companies. Annual reports of companies, stock exchanges and regulators are the principal sources of the data. The database covers the profit and loss statement, balance sheet and ratios based on the financial information. In the case of listed companies, it includes the cash flow statement, quarterly financial statements, share prices, corporate action and daily total returns. This database was previously employed by Khanna and Palepu (2000) and Gopalan and Gormley (2013) to examine firm performance and firm financing choices.

Sample Frame

Table 1 presents the descriptive statistics of important variables considered in the analysis. VC is a categorical variable which takes the value of 1 if the firm has an investment by VC investors, otherwise 0. VC_FOR is a categorical variable which takes the value of 1 if the firm has an investment by FVC investors, otherwise 0. VC_DOM is a categorical variable which takes the value of 1 if the firm has an investment by DVC investors, otherwise 0. TOBINQ is the ratio of market capitalization to total assets. RET is the annualized market return. LEV is the ratio of debt to total assets. SIZE is considered in the

form of total assets. R&D is the ratio of research & development expenses to total assets. AGE is the number of years since the incorporation year. PROM_HOLD is the percentage of promoters' ownership stake.

We consider all the firms that are listed on the Bombay Stock Exchange (BSE) from 2005 to 2014 representing all the industries. The panel data analysis includes 565 firm-year observations with investments by VC firms. Among the sample firms, we have 359 firms with DVC investment and 206 with FVC funds. Among the panel's data set, we have about 300 firm-year observations with VC investment.

Table 1 presents the descriptive statistics of the data. The mean values of the performance indicators considered in the form of TOBINQ and market returns are 1.27 and 0.84, respectively, with the size in the form of total assets as ₹7.13 million. The market valuation of a sample is observed as higher valuation assessed by accounting measures (not reported). The average age of a firm is 3.24 years, having promoters' ownership as 51 per cent.

Table 2 represents the correlation factor of important variables of analysis. The VC is a categorical variable which takes the value of 1 if the firm has an investment by VC investors, otherwise 0. VC_FOR is a categorical variable which takes the value of 1 if the firm has an investment by FVC investors, otherwise 0. VC_DOM is a categorical variable which takes the value of 1 if the firm has an investment by DVC investors, otherwise 0. TOBINQ is a ratio of market capitalization of the firm to the total asset. RET is the annualized market return. LEV is ratio of debt of the firm to the total asset. SIZE is the total asset. R&D is ratio of research & development expenses of the firm to the total asset. AGE is the number of years since the incorporation year. PROM_HOLD is the percentage of promoters' ownership stake.

Table 2 presents correlation matrix of all the variables presented in the analysis. We observe a statistically significant correlation between some of the variables considered in the study. These high correlations motivated us to test for multicollinearity using variance inflation factor (VIF). However, the maximum VIF score was found to be less than 5 in all the cases, which is within the permissible range (Myers, 1990).

Table 1. The Descriptive Statistics of Different Financial Variables of Companies

	N*	Mean	50th percentile	25th percentile	75th percentile	Maximum	Minimum	Standard Deviation
VC	18525	0.016	0.000	0.000	0.000	1.000	0.000	0.124
VC_FOR	18525	0.009	0.000	0.000	0.000	1.000	0.000	0.095
VC_DOM	18525	0.015	0.000	0.000	0.000	1.000	0.000	0.122
TOBINQ	18525	1.273	0.794	0.964	1.301	9.282	0.240	1.099
RET	18525	0.847	−1.520	0.550	3.400	13.230	−8.020	3.762
LEV	18071	0.296	0.144	0.290	0.427	0.769	0.001	0.188
SIZE	18402	7.139	5.878	7.283	8.610	12.092	−1.204	2.226
R&D	18525	0.002	0.000	0.000	0.000	0.037	0.000	0.005
AGE	18525	3.242	2.944	3.178	3.526	5.024	0.693	0.542
PROM_HOLD	18399	0.515	0.406	0.529	0.649	0.996	0.000	0.180

Source: Authors' own findings.

Note: *The number of observations is likely to differ for different variables since the study has considered unbalanced panel data and it is likely that the information for some variable for firms is likely to be missing if it has any break in the trading or is delisted temporarily. Variable definitions are provided in the Appendix.

Table 2. Correlation Matrix among Different Variables

	VC	VC_DOM	VC_FOR	TOBINQ	RET	LEV	SIZE	R&D	AGE	PROM_HOLD
VC	1									
VC_DOM	0.986*	1								
VC_FOR	0.024*	−0.012	1							
TOBINQ	0.005	0.005	−0.001	1						
RET	−0.006	−0.006	0.005	−0.011	1					
LEV	0.007	0.005	0.014	−0.127*	0.011	1				
SIZE	0.025*	0.021*	0.030*	0.133*	0.054*	0.199*	1			
R&D	0.003	0.004	0.003	0.155*	0.024*	−0.095*	0.155*	1		
AGE	−0.027*	−0.027*	−0.014*	0.023*	−0.016*	−0.023*	0.200*	0.068*	1	
PROM_HOLD	−0.002	−0.002	−0.019*	0.087*	0.002	0.062*	0.211*	0.019*	0.116*	1

Source: Authors' own findings.
Note: * denotes Significance at the 5% level (2-tailed). Variable definitions are provided in the Appendix.

Empirical Model

We empirically investigate the impact of VC investment on firm performance. We use panel data for our sample firms. The investment decision of VC investors may be subject to various factors which are time variant. These can create the temporal heterogeneity in the data set while evaluating for a larger time period. The panel data analysis explicitly takes care of this time-variant temporal heterogeneity. Baltagi (1995) reported various advantages of panel data having the potential of reducing biased results. The time invariant effect is likely to be across a certain group which is referred to as the fixed effect (FE), or the effect can be random which is random in nature caused due to the firm's specific time-variant factors. The FE model assumes that time-invariant factors do not cause any change and are constant. The panel data analysis captures the dynamic variations in a much better way than cross-sectional data analysis or time series data analysis that potentially occurs due to various factors and therefore is very appropriate for our analysis. The same technique is supported and justified by Purkayastha (2013), Kaur, Yadav and Gautam (2013).[3]

The generalized form of the panel data model as presented by Maheshwari and Rao (2017) is

$$Y_{it} = \alpha + \beta X_{it} + \varepsilon_{it}$$

where i represents the cross-sectional part of the data and t indicates the time variation in the model. Y_{it} is a dependent variable and X_{it} is the generalized form of the independent variables considered for the estimation of Y_{it}. α is the constant representing the intercept and ε_{it} is an error term which is separated out for the firm specific effect (ε_i) and random effect (v_t) such as

$$\varepsilon_{it} = \varepsilon_i + v_t$$

The following equation represents our model specification-based specific variables employed for the estimation purpose in Equation (1) to test the FE model of the panel data sample.

$$Performance_{it} = \alpha + \beta_1 VC_{it-1} + \beta_2 SIZE_{it-1} + \beta_3 LEV_{it-1} + \beta_4 R\&D_{it-1} + \beta_5 AGE_{it-1} + \varepsilon_{it}$$

where $performance_{it}$ is the dependent variable with t = time and i is for the i^{th} firm. (t−1) is the lagged time-variant variable for the FE. α is intercept for each entity, $\beta_1 - \beta_5$ are coefficients of the respective independent variable and ε_{it} is the error term.

We consider market performance measures (TOBINQ and share return) as a proxy for firm performance similar to Narang and Kaur (2014) and Afza and Nazir (2015). To test the impact of monitoring, we use VC ownership dummy (VC). In the same equation, we substitute the VC origin dummy based on domestic ownership (VC_DOM) and foreign ownership (VC_FC), to evaluate the influence of the origin of VC. We estimate both equations after controlling for promoters' holding (PROM_HOLD). We also include year-fixed effects in the model.

Analysis

We had to determine the appropriate model, that is, FEs or random effects. The FE model assumes that the time-invariant factors are unique and are not correlated with the individual characteristics. The entity error term and constant are not be correlated with other individual characteristics if we need to run the FE model. To verify this, we run the Hausman test and observe that the assumptions for the random effects estimation violate the model, whereas the FE model, which has a significance level of 5 per cent, is appropriate to use for all the models. The FE estimator also effectively controls the sample firms' unobservable FEs. This allows us analyse our objectives by using the FE model.

The Hausman test results are presented as follows:

The unique error is not correlated with the independent variables or the difference in the coefficients of the variables is not systematic.

$$\text{Probability } (p \text{ value}) = 0.0001$$

Since p value is < α (0.05) and statistically significant, we reject the null hypothesis and use the FE model for our analysis.

We considered TOBINQ and the annualized market return as performance measures for the firms. Table 3 presents the regression results. In these models, the PE investors are presented in the form of a binary variable. Further, we separate out the analysis for FVC investors and DVC investors. We consider firm size, leverage, research and development expense and firm age as control variables in the FE regression analysis. All the firms having VC investment are considered in models 1 and 2 with TOBINQ and the annualized market return as a dependent variable, respectively.

Table 3 presents the regression results of the FE model measuring firm performance as a dependent variable in the form of TOBINQ and RET. TOBINQ is the ratio of market capitalization of the firm to the total asset. RET is annualized market return. VC is a categorical variable which takes value of 1 if the firm has investment by VC investors, otherwise 0. VC_FOR is a categorical variable which takes value of 1 if the firm has investment by FVC investors, otherwise 0. VC_DOM is a categorical variable which takes the value of 1 if the firm has an investment by DVC investors, otherwise 0. LEV is the ratio of debt to the total asset. SIZE is natural log of the total asset. R&D is ratio of research & development expenses of the firm to the total asset. AGE is the number of years since the incorporation year.

Model 1 with TOBINQ as a dependent variable indicates that the investment of VC has a significant negative impact in determining firm performance. The model also indicates the significance of most of the control variables except firm size. The results are quite surprising and do not support monitoring by VCs. The involvement of VC investors indicates value erosion in the Indian capital market. In other

Table 3. Regression Analysis of Market Return in Evaluating VC Investment for Indian Companies#

DEPENDENT VARIABLES	TOBINQ	RET	TOBINQ	RET	TOBINQ	RET
INDEPENDENT VARIABLES	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5	MODEL 6
VC	−0.116**	−0.517				
	(0.049)	(0.131)				
VC_FOR			−0.057	−0.790*		
			(0.483)	(0.096)		
VC_DOM					−0.127**	−0.498
					(0.033)	(0.148)
SIZE	0.001	0.082*	0.001	0.081*	0.001	0.082*
	(0.896)	(0.071)	(0.913)	(0.074)	(0.893)	(0.070)
LEV	−0.136***	−0.178	−0.138***	−0.192	−0.135***	−0.177
	(0.008)	(0.550)	(0.007)	(0.518)	(0.008)	(0.553)
R&D	18.76***	11.90	18.74***	11.58	18.75***	11.90
	(0.000)	(0.327)	(0.000)	(0.340)	(0.000)	(0.327)
AGE	−0.250***	−0.606	−0.245***	−0.582	−0.250***	−0.605
	(0.000)	(0.139)	(0.001)	(0.155)	(0.000)	(0.139)
_cons	2.329***	3.121**	2.316***	3.063**	2.330***	3.119**
	(0.000)	(0.012)	(0.000)	(0.014)	(0.000)	(0.012)
N	18755	18755	18755	18755	18755	18755
R^2	0.078	0.016	0.077	0.016	0.078	0.016

Source: Authors' own findings.

Note: *, ** and *** denote the significance at 10%, 5% and 1% levels, respectively. Variable definitions are provided in the Appendix.

words, the firm performance evaluated based on capital market performance, in which VCs are involved, is observed as negative. These results do not support certification hypothesis as well as monitoring hypothesis associated with VC investors in the Indian context. Similar results do not hold true when we change the dependent variable to the annualized market return. It is found to be significant for a significance level of around 14 per cent. However, the coefficient is still negative. This indicates that the market value of a company in comparison with book value shows value erosion; however, in absolute terms with market return, the VC investment does not show any significance. These results prove that the investors do not perceive the positive certification effect due to the involvement of VC investors. The potential reason for observing negative significance could be that if the VC investors enter the investment through the secondary market, they will be more opportunistic and may not be involved in the monitoring activity. Since they are blockholders and sophisticated investors, they are likely to exit (partially or fully) through the secondary market if they do not get the expected returns on their investment. The exit option for VC investors is not very difficult since the firms are traded on the secondary market unless the investment is made through preferential allotment which is subject to 1 year of the lock-in period.

In further models, we decomposed VC investors into FVC firms and DVC firms. In the panel where we consider FVC, we observe an insignificant impact of its investment while considering firm performance measure with TOBINQ; however, the market returns are observed as negatively significant. The justification of observed results can be linked through the investment constraints induced on the FVC by the Indian capital market regulator (SEBI). The FVCs are compelled to invest 66.67 per cent of the funds into an unlisted equity. As a result, they are left with only 33.33 per cent of equity investment in listed securities. Therefore, they have limited funds to manage the portfolio and take corrective action

to increase the returns through their investment in listed securities. As a result, observing the negative significance of FVC in the Indian equity market is justified. In models 5 and 6, we consider DVC investors. The results are consistent with our earlier models, 1 and 2. TOBINQ shows the significant negative impact of DVC investors; however, market returns are not influenced due to DVC investors.

Our results indicate that firm performance considered in the form of TOBINQ is observed negative mainly because of DVC investors and the negative impact of market return is observed due to FVC investors. These results indicate that the origin of the VC investor has a significant impact on firm performance.

Our study indicates the influence of VC investors in the listed firms which continues even after the listing. Our study reveals that the involvement of VC investors after listing does not support the monitoring and certification effect in the Indian market.

Indian businesses are characterized by family ownership. The involvement of family background in India has a significant influence on business operations including major corporate events like mergers and takeovers (Banga & Gupta, 2014). To evaluate this characteristic of Indian businesses, we also consider the impact of promoters' ownership and presented the results in Table 4.

Our results from Table 3 still hold true except for models 3 and 4 where we observe that FVC investors do not indicate any significance in determining firm performance with TOBINQ as well as market return. However, in all the models, promoters' ownership is observed as highly significant. The negative significance of VC investors is mainly supported by DVCs on the value of TOBINQ.

Table 4 presents the FE model regression results of important variables of analysis with promoters' holdings. TOBINQ and RET are dependent variables. TOBINQ is the ratio of market capitalization of a firm to total assets. RET is the annualized market return. VC is a categorical variable which takes the value of 1 if the firm has an investment by VC investors, otherwise 0. VC_FOR is a categorical variable which takes the value of 1 if the firm has an investment by FVC investors, otherwise 0. VC_DOM is a categorical variable which takes the value of 1 if the firm has an investment by DVC investors, otherwise 0. LEV is the ratio of debt to the total asset. SIZE is considered in the form of natural log of the total asset. R&D is the ratio of research & development expenses to the total asset. AGE is the number of years since the incorporation year. PROM_HOLD is the percentage of promoters' ownership stake.

We corroborated the robustness of our results by applying Generalize Method of Moments (GMM) models to compare the current results with FE models. Based on the GMM models also, our results do not alter. In other models, we considered the ownership stake of PE investors instead of considering the dummy variable of PE investment. The ownership stake is also found insignificant in influencing the performance through the governance variable. Therefore, our results presented through the FE model are robust.

Conclusion

Our study reveals that in the emerging market, the PE investors are passive and do not really show active participation to improve firm performance as expected based on the monitoring hypothesis. The study does not find evidence of any significant influence on firm performance due to the involvement of VC investors. The underpinning reason is that our study has evaluated all the listed firms in which PE investors have the opportunity to exit through the secondary market. Our study refutes monitoring hypothesis and certification hypothesis associated with VC investors. In an emerging market, if PE investors are associated with listed firms, they can easily exit from the investment through the secondary market in the anticipation of negative performance. This option of exit is perceived as opportunistic behaviour and perceived negatively by market participants indicating value erosion. Therefore, the

Table 4. Regression Analysis of Market Return in Evaluating VC Investment for Indian Companies with Promoters' Holding#

DEPENDENT VARIABLES INDEPENDENT VARIABLES	TOBINQ MODEL 1	RET MODEL 2	TOBINQ MODEL 3	RET MODEL 4	TOBINQ MODEL 5	RET MODEL 6
VC	−0.117**	−0.509				
	(0.046)	(0.137)				
VC_FOR			−0.053	−0.694		
			(0.519)	(0.151)		
VC_DOM					−0.128**	−0.489
					(0.030)	(0.156)
SIZE	0.000	0.086*	0.000	0.085*	0.000	0.0860*
	(0.980)	(0.063)	(0.997)	(0.067)	(0.977)	(0.063)
LEV	−0.153***	−0.113	−0.155***	−0.125	−0.152***	−0.111
	(0.003)	(0.708)	(0.003)	(0.678)	(0.003)	(0.711)
R&D	18.79***	11.76	18.77***	11.47	18.79***	11.76
	(0.000)	(0.332)	(0.000)	(0.344)	(0.000)	(0.332)
AGE	−0.242***	-0.659	−0.238***	−0.635	−0.243***	−0.658
	(0.001)	(0.108)	(0.001)	(0.121)	(0.001)	(0.109)
PROM_HOLD	0.485***	−0.964**	0.483***	−0.978**	0.486***	−0.964**
	(0.000)	(0.022)	(0.000)	(0.020)	(0.000)	(0.022)
_cons	2.072***	3.737***	2.060***	3.686***	2.073***	3.735***
	(0.000)	(0.003)	(0.000)	(0.004)	(0.000)	(0.003)
N	18525	18525	18525	18525	18525	18525
R^2	0.082	0.017	0.082	0.017	0.082	0.017

Source: Authors' own findings.

Note: *, ** and *** denote significance at 10%, 5% and 1% levels, respectively. Variable definitions are provided in the Appendix.

certification effect is not observed positively. Similarly, VC investors do not have enough motivation to get involved in monitoring activity to improve firm performance. The limitation on the investment of VC in listed securities enforced through the regulations and the easy exit option through the secondary market are one of the important reasons for VC investors to be passive and do not show significant contribution towards firm performance either through monitoring or through certification.

Managerial Implications

The study provides very important managerial implications. Firm managers must be watchful about the trading activity of VC if they are involved in the ownership structure of any listed firms. The managers can formulate other strategic attempts to control value erosion through VC investors. The older firms are not benefited from VC investment. The study is also useful to other stakeholders such as shareholders, lenders and analysts, among others. Analysts and other potential investors can take informed investment decisions while investing in firms with VC investments. Lenders can take financing decisions based on how VC firms perform.

Limitations and Future Research

The study has limitations in terms of data availability of VC investors. Future research can focus on evaluating the exit strategy of VC investors and its impact through the volume of stake that VCs sell in the secondary market linking it with firm performance.

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Appendix

Table A1. Definitions of Variables included in the Multivariate Analysis#

Variables	Description	Type of Variables
VC	It is a categorical variable which takes value of 1 if the firm has investment by venture capital investors, otherwise 0	Independent testable variable
VC_FOR	It is a categorical variable which takes value of 1 if the firm has investment by foreign venture capital investors, otherwise 0	Independent testable variable
VC_DOM	It is a categorical variable which takes value of 1 if the firm has investment by domestic venture capital investors, otherwise 0	Independent testable variable
TOBINQ	It is a ratio of market capitalization of firm plus book value of debt to total asset	Dependent proxy for performance
RET	Annualized market return	Dependent proxy for performance
LEV	Debt to total asset	Independent Control Variable
SIZE	Natural log of total asset	Independent Control Variable
R&D	Research & Development expenses to the total asset	Independent Control Variable
AGE	Number of years since the incorporation year	Independent Control Variable
PROM_HOLD	Percentage of promoters' ownership stake	Independent Control Variable

Source: Authors' own.
Note: # Authors' definitions.

Notes

1. Retrieved from http://www.sebi.gov.in/legal/regulations/dec-1996/sebi-venture-capital-funds-regulations-1996_19387.html
2. Retrieved from http://www.sebi.gov.in/legal/regulations/sep-2000/sebi-foreign-venture-capital-investors-regulations-2000_19224.html
3. Refer Kaur et al. (2013), p. 735 for details on panel data analysis with relationship explained between fixed effect and random effect including pooled ordinary least square method. Kaur et al. (2013) also report the advantages and appropriateness of fixed effect and random effect following in the panel data analysis.

References

Afza, T., & Nazir, M. S. (2015). Role of institutional shareholders' activism in enhancing firm performance: The case of Pakistan. *Global Business Review*, *16*(4), 557–570.

Agrawal, A., & Mandelker, G. N. (1990). Large shareholders and the monitoring of managers: The case of antitakeover charter amendments. *Journal of Financial & Quantitative Analysis*, *25*(2), 143–161.

Baltagi, B. H. (1995). Editor's introduction panel data. *Journal of Econometrics*, *68*(1), 1–4.

Banga, C., & Gupta, A. (2014). An analysis of characteristics of mutual fund mergers and takeovers in India. *Quarterly Journal of Finance & Accounting*, *51*(1–2), 69.

Barclay, M. J., Holderness, C. G., & Sheehan, D. P. (2007). Private placements and managerial entrenchment. *Journal of Corporate Finance*, *13*(4), 461–484.

Bonini, S., Alkan, S., & Salvi, A. (2012). The effects of venture capitalists on the governance of firms. *Corporate Governance: An International Review*, *20*(1), 21–45.

Bouresli, A. K., Davidson III, W. N., & Abdulsalam, F. A. (2002). Role of venture capitalists in IPO corporate governance and operating performance. *Quarterly Journal of Business & Economics*, *41*(3–4), 71–82.

Demsetz, H. (1983). The structure of ownership and the theory of the firm. *Journal of Law & Economics*, *26*(2), 375–390.

Duggal, R., & Millar, J. A. (1999). Institutional ownership and firm performance: The case of bidder returns. *Journal of Corporate Finance*, *5*(2), 103–117.

Gompers, P. A. (1996). Grandstanding in the venture capital industry. *Journal of Financial Economics*, *42*(1), 133–156.

Gopalan, R., & Gormley, T. A. (2013). Do public equity markets matter in emerging economies? Evidence from India. *Review of Finance*, *17*(5), 1571–1615.

Groh, A., & Liechtenstein, H. (2012). Assessing country attractiveness in the venture capital and private equity landscape in emerging markets. In D. Klonowski (Ed.), *Private equity in emerging markets* (pp. 31–43). New York, NY: Palgrave Macmillan.

Hertzel, M., & Smith, R. L. (1993). Market discounts and shareholder gains for placing equity privately. *Journal of Finance*, *48*(2), 459–485.

Hochberg, Y. V. (2012). Venture capital and corporate governance in the newly public firm. *Review of Finance*, *16*(2), 429–480.

Kaur, M., Yadav, S. S., & Gautam, V. (2013). Financial system development and foreign direct investment: A panel data study for BRIC countries. *Global Business Review*, *14*(4), 729–742.

Khanna, T., & Palepu, K., (2000). Is group affiliation profitable in emerging markets? An analysis of diversified Indian business groups. *Journal of Finance*, *55*(2), 867–891.

Maheshwari, Y., & Rao, K. T. V. (2017). Determinants of corporate cash holdings. *Global Business Review, 18*(2), 416–427.

Megginson, W. L., & Weiss, K. A. (1991). Venture capitalist certification in initial public offerings. *Journal of Finance*, *46*(3), 879–903.

Myers, R. H. (1990). *Classical and modern regression with applications* (2nd ed.). Boston, MA: PWS Kent.

Narang, S., & Kaur, M. (2014). Impact of firm-specific attributes on shareholder value creation of Indian companies: An empirical analysis. *Global Business Review*, *15*(4), 847–866.

Pichhadze, A. (2010). Private equity, ownership and regulation. *Journal of Private Equity*, *14*(1), 17–24.
Purkayastha, S. (2013). Diversification strategy and firm performance: Evidence from Indian manufacturing firms. *Global Business Review*, *14*(1), 1–23.
Shleifer, A., & Vishny, R. W. (1986). Large shareholders and corporate control. *Journal of Political Economy*, *94*(3), 461–488.
Stotz, O., Wanzenried, G., & Döhnert, K. (2010). Open-market purchases of public equity by private equity investors: Size and home-bias effects. *Journal of Economics & Business*, *62*(6), 562–576.
Tykvová, T., & Borell, M. (2012). Do private equity owners increase the risk of financial distress and bankruptcy? *Journal of Corporate Finance*, *18*(1), 138–150.
Wahal, S. (1996). Pension fund activism and firm performance. *Journal of Financial & Quantitative Analysis*, *31*(1), 1–23.
Wruck, K. H. (1989). Equity ownership concentration and firm value: Evidence from private equity financings. *Journal of Financial Economics*, *23*(1), 3–28.
Wruck, K. H., & Wu, Y. (2009). Relationships, corporate governance, and performance: Evidence from private placements of common stock. *Journal of Corporate Finance*, *15*(1), 30–47.
Wu, Y. (2004). The choice of equity-selling mechanisms. *Journal of Financial Economics*, *74*(1), 93–119.