

WORKING PAPER NO: 542

**Venture Capital and Private Equity Investing in India – An
Exploratory Study¹**

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Year of Publication – March 2017

¹Preliminary. Please do not cite without prior permission. Funding support for this research from IIM Bangalore in the form of seed research grant is gratefully acknowledged. The analysis in this paper would not have been possible without the painstaking cleaning and reorganizing of the data from VI that was carried out by Varshini Sriram. Our sincere thanks to her.

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Abstract

The Indian Venture Capital and Private Equity (VC and PE) industry have witnessed a dramatic increase in terms of the number of enterprises funded as well as the volume of capital committed. 850 funds have supported 3699 enterprises across a wide range of industries, across the Northern, Southern and Western regions of the country predominantly. They have provided 5545 rounds of funding resulting in around 8800 transactions. These are large volumes even by international standards. Yet the industry remains under-researched. This paper builds on and significantly extends some prior work in this area. It finds that through the analysis that the industry has evolved into being a source of growth financing for innovative and technology led businesses. The analysis also reveals that the market for managing VC funds is highly competitive with fairly high rates of entry and exit of fund management entities.

Keywords: Venture Capital, Private Equity, Growth Financing, Fund Management

The venture capital industry in India has been in operation in some form since 1973 when the Risk Capital Foundation was established. However, data on the investment activity is available at present only from 1999-2000. Patches of data are available from the Indian Venture Capital Association and annual reports of various funds that were in operation at that time. These reports do not provide data on a consistent basis, which makes it difficult to use them with other data available in the public domain. The period from 1999 to 2016 coincides with a period of high growth as well as deepening and the broadening of the industry. Investment practices have also evolved a great deal during this period.

Research into the Indian VC industry is relatively limited. The challenges in research relating to VC and PE in the western world have been documented in Da Rin et al (2011). Research relating to Indian VC is made even more challenging by the limited availability of data. As such a comprehensive picture of the Indian PE and VC industry based on scholarly research does not exist presently. A few industry review or survey type studies exist. Some are periodic such as Sheth and Krishnan (2013), while some are occasional such as Pandit (2014). A set of scholarly articles were written based on an annual review of the industry in Thillairajan and Deshmukh (2011), Thillairajan and Kamat (2012). This stylized analysis builds on prior work by updating those analyses with more current data, focusing on certain aspects such as growth financing to a deeper extent as well as examining a few additional aspects of the investment activities of PE and VC funds. It also examines the institutional environment governing the PE and VC industries in India. This is based on the view that the institutional context influences investment behaviour of funds as well as investment outcomes as posited in Lerner and Tag (2013) and Hazarika et al (2009). In particular it focusses on the regulatory regime.

This paper is organized as follows. Section 1 traces the evolution of the VC industry in India. Section 2 outlines the institutional framework in which the PE and VC industry in India operates. Section 3 discusses the data sources and the methodology adopted in this paper. Section 4 provides an overview of the demand side of the VC industry during study the period from 1999 to 2016. Section 5 analyses the supply side funding of the Indian VC and PE industry. Section 6 presents questions for further research and concludes.

The evolution of the Indian PE and VC industry³

Venture investing in India is often traced to the initial efforts by the Government of India at providing risk capital which resulted in the establishment of the Risk Capital Foundation. [] There have been many other efforts at providing risk funding for various targeted initiatives such as the creation of the Technology Development Fund (TDF) from a cess that was to be levied on all technology imports in the budget of the Government of India in 1986 [Ramachandran (2002)] and other quasi-market based initiatives such as the Programme for Advancement of Commercial Technology (PACT) [USAID (1989)]. The commencement of institutional VC in India is associated with the creation of the Technology Development and Information Company of India, as a joint venture fund

³This evolution is primarily based on Kenney and Dossani (2001), Dossani and Desai (2006) and Sabarinathan (2002).

management venture between ICICI Bank (The Industrial Credit and Investment Corporation of India at that time) and the Unit Trust of India, a state owned monopolist in the management of mutual fund investment schemes for retail investors at that time. The development of the venture capital industry in those days is divided into four broad phases as summarized in the table below.⁴ During the first phase homegrown fund management entities were the main players, many of them state-owned entities. The second phase marked the entry of foreign funds, also referred to as the “internationalization” of venture capital in India. William Draper III set up the first international venture fund management enterprise, Draper International, bringing in international fund management practices and international investment capital. More international players entered the market during the third phase while the fourth phase marked the rationalization of the industry post the technology boom period and a fresh phase of investment interest in India emerged from 2004 on the back of the high real rate of growth of the national economy and certain sectors such as the services and high tech manufacturing according to Aggarwal (2007). This paper analyses the developments in this industry from 1999, around the time that the industry started attracting capital from a diversified set of international investors.

	Phase I	Phase II	Phase III	Phase IV
	Pre-1995	1995-97	1998-2001	2002-2005
Total Funds: (\$ m)	30	125	2847	5239
Number of Funds	8	20	50	75
Primary Stages and Sectors	Seed, Early-stage and Development – Diversified	Development – Diversified	Early-stage and Development– Telecom & IT	Growth/Maturity – Diversified
Primary Sources of Funds	World Bank, Government	Government	Overseas Institutional	Overseas Institutional

The Institutional Context of VC Investing in India

One of the key components of the institutional framework is the regulatory regime. The regulatory regime for VC and PE in India operate at three levels. At the top of the process of investing capital is the set of regulations affecting the constitution of the investment vehicle and the inward cross-border remittance of funds and cross-border outward remittance of disinvestment proceeds. At the next level are regulations governing the issuance of securities by investee companies and the laws relating to the governance of the investee enterprise. A related set of regulations are those governing the listing and trading of enterprises on public securities exchanges. And then there are regulations governing the starting up of enterprises, their conduct of businesses and their shutting down of the same. Finally, there are the regulations governing the taxation of gains and income from investment activities.

⁴The table has been adapted from Dossani and Desai (2006), p-24

According to one estimate only about ten percent of the funds that are invested in Indian VC and PE industry is from domestic sources⁵ implying that well over ninety percent of the capital that is invested in this asset class is of foreign origin. Foreign investors in India can invest in Indian enterprise through three different routes.⁶ It is important to be aware of these options since each of these regulatory artefacts has important economic implications to the fund's business. These routes are as follows.

- i. Pooling all the investment funds into an offshore fund. An offshore fund is an investment vehicle incorporated in a country outside India. The most popular jurisdiction in which these vehicles are established outside India appears to be Mauritius, followed by Singapore. The capital is then channelled directly into the Indian enterprise.
- ii. Pooling all the capital into an offshore fund which in turn subscribes to an investment fund constituted in India. The Indian fund then invests into Indian enterprises. Investment funds constituted in India are subjected to the regulations governing alternative investment funds. These are SEBI (Alternative Investment Funds) Regulations, 2012, promulgated by Securities and Exchange Board of India (SEBI), India's regulator of securities markets and participants therein. Key provisions of these regulations are discussed later in this paper.⁷
- iii. Creating two parallel structures where all the foreign capital is pooled into an offshore vehicle and the capital contributions from Indian investors are pooled into an onshore vehicle. The funds from the two parallel vehicles are invested in Indian enterprises. The allocation of investments between the two funds is in proportion to their undrawn capital commitments.

Investments by way of VC and PE funding from offshore vehicles are mainly governed by the foreign direct investment (FDI, hereafter) regulations of India.⁸ Over the years these regulations have lightened up considerably to permit unrestricted foreign ownership of a nearly all sectors. At present banking, real estate and insurance are subject to maximum limits on foreign ownership while foreign ownership is not permitted in defence, media and multi-brand retailing. Thus most private equity investments are subject to an automatic approval to be accorded by India's central bank, the Reserve Bank of India. Similarly remittance of disinvestment proceeds or dividends are also not subjected to any significant restrictions, unless the disinvestment price is not based on the price at which the securities are traded on a stock exchange.⁹

⁵ See Nishith Desai Associates (2016), Fund Structuring and Operations: Global, Regulatory and Tax Developments impacting India focused funds. Publication accessed online at http://www.nishithdesai.com/fileadmin/user_upload/pdfs/Research%20Papers/Fund_Structuring_Operations.pdf on February 6, 2017.

⁶This discussion draws on Nishith Desai Associates (2016), *op cit*.

⁷Text of the regulations can be found at http://www.sebi.gov.in/cms/sebi_data/commondocs/AIFregulations2012_p.pdf. A useful summary of the same can be found in Nishith Desai Associates (2016), *op cit*.

⁸These are in turn governed by the Foreign Exchange Management (Transfer or Issue of Security by Persons Resident Outside India) Regulations, 2000, promulgated under the Foreign Exchange Management Act, 1999 (FEMA hereafter). The FEMA is an important statute affecting businessmen outside India since it regulates all cross-border movements of funds, out of and into India. VC and PE investors are permitted to bring in their funds subject to the regulations governing foreign portfolio investors (FPIs). However, given that FPIs are not allowed to acquire more than ten percent of the voting securities of a company this route is not relevant for all practical purposes to VC and PE funds.

⁹Indian FDI regulations, as might be the case with their counterparts in other countries, were designed to regulate the strategic entry of foreign enterprises into India. They undergo periodic amendments to reflect the political stance of the government in

Certain other restrictions limit the flexibility for foreign VC and PE investors in terms of doing business. For example, VC and PE investments that are structured as convertible debt are subject to rules and restrictions governing foreign currency borrowing, which are often onerous and subject to periodic changes. Similarly preference shares that are convertible at the option of the investor are treated as foreign currency borrowings under the extant regulations. These borrowings require specific approvals.

Enterprises operating with a commercial mission in India can be established in India as a proprietorship, partnership, limited liability partnership, a company with limited liability provisions¹⁰ or as a cooperative. Of these the company with the limited liability is the most commonly used form for the purposes of our discussion.¹¹ Companies incorporated in India are governed by the Companies Act, 2013 (the company law, hereafter). The company law is an elaborate statute, modelled along the lines of the British corporate law and applies to all corporate enterprises doing business in India. It specifies the processes for a company to come into existence, the conditions for it to remain in business legally, which include numerous obligations to disclose financial and non-financial information and the processes for a company to discontinue business or even cease to exist. It governs the issuance of various types of securities, defines the rights of holders of various securities *inter se* as well as *vis a vis* the issuer. It further spells out the legal principles of the governance of a company. In addition the issuance and trading of securities by a company and the listing of its various securities on a public securities exchange are governed by a different statute, known as the Securities Contract Regulation Act, 1956 as well as the rules and regulations laid down by individual securities exchanges. The functioning of the public securities market and those enterprises whose securities are publicly traded are overseen by a regulator known as the Securities and Exchange Board of India (SEBI, hereafter).¹²

In addition, enterprises in India are also subjected to a host of regulations that govern their conduct of business. Some of these laws operate at the national level and some at the provincial or state level.¹³ The differences in these regulations can often have serious consequences for enterprises and investors in those enterprises. To cite a recent example, taxi aggregators and car rental companies operating in India realized to their surprise that local regulations could affect the very continuance of their business in some important states because they were not permitted under the relevant local laws.

power on foreign enterprises. To the extent that they govern VC and PE investments too, occasionally they can present business challenges to VC and PE funds too in terms of entry, follow-on funding and exiting from investments. The insurance and banking industries are cases in point.

¹⁰There are other types of companies that can be incorporated in India. Those are not relevant to the discussion here.

¹¹Lately there has been a tendency to establish start-ups as limited liability partnerships. But they are relatively fewer and so do not warrant a detailed discussion here.

¹²SEBI is the Indian counterpart of the Securities and Exchange Commission in the USA, although in terms of legal status and statutory powers there are some significant differences between the two.

¹³It is useful to point out that as per its constitution India is a unitary republic, which essentially means that the political governance of the country is decided at the national level (corporate law is one of them, for example), with a few subjects (example land administration, local taxes) administered at the state level and a few (education, for example) are administered concurrently at the national and state level. This division of powers is considered to have a significant impact on the ease of doing business in India as a whole and within India in different states.)

Finally, tax and gains from business in India are governed by the Indian Income Tax Act, 1961. However, most private equity funds pooling capital from foreign investors are located in tax neutral jurisdictions that benefit from the double tax avoidance agreements (DTAAs) that the Government of India has entered into with countries across the world.¹⁴ The DTAAs and the keenness of the government to encourage foreign investment notwithstanding, once in a while tax administration does become a source of anxiety for investors and managements of enterprises as it happened in the case of the large international telecommunication service provider where a reported retrospective tax levy of US \$ caused concern to international investors.

Data Sources and Methodology

Our primary source of data is a public data provider, Venture Intelligence (VI). VI is the oldest provider of data on the VC and PE industries in India. A few more data providers have emerged in the past few years.¹⁵ We choose VI for two reasons. The VI database has benefited from its widespread use by a number of players in the venture investing industry, related intermediaries, as well as a host of other researchers, including academic researchers, and the consulting industry.¹⁶ VI also provides all transaction related data in one single place that makes it amenable to easy analysis.

The VI dataset provides data at the level of the individual transaction. The data items that it provides are the name of the enterprise, the round of financing, the date of transaction, brief description of the enterprise, the business of the enterprise at two levels of classification of the industry, names of the investors, location of the enterprise, funding amount, valuation in some instances, some descriptive remarks, the website of the enterprise. VI's industry classification at the higher level has Categories which makes it more tractable in terms of analysis but does not offer enough granularity to draw meaningful inferences. VI's more detailed classification comprises Categories which offers a higher granularity. However the large number of categories makes it less tractable from the point of view of analysis. We reclassify the industry into 34 industry categories to make the classification more tractable and at the same have a reasonable level of granularity. We do so using the description of the business that VI provides. In doing so we do not follow the standard industry classification code given the novelty of many of the businesses and so they may not conform to the traditional industry definitions. Similar studies in the field of venture investing such as Have adopted the practice of creating industry classifications specifically suited to their research. We examine the data for internal consistency and completeness. We also carry out quick checks with other sources such as Crunchbase. We then lay out the data to be able to analyse the data at the three levels of transactions that we explain below.

¹⁴The key tax related considerations is tax neutrality. Neutrality according to Nishith Desai Associates (2016), *op. cit.*, means that investors would not pay higher taxes by investing through the fund than they would have if they had invested directly.

¹⁵The more popular ones are VCC Edge and more recently Tracxn. Crunchbase has data on the rounds of funding raised by most of the enterprises that we find in the VI database with the timelines. Data on various aspects of VC and PE transactions are also available in a host of media publications that focus on entrepreneurship as also providers of financial market data such as Reuters and Bloomberg.

¹⁶It is important to point out that we make no claim about the popularity of VI as a data source, much less do we suggest that VI leads in terms of popularity among all data sources. That would require a formal study of the number of published studies and articles that have drawn on VI data.

We measure investment activity at three levels. At the topmost level is the enterprise or the investee company. Many outcomes of interest to us are measured at the level of the enterprise. The numbers of rounds of funding, the region or the city where the enterprise is headquartered, creation of an exit path are examples of such outcomes. At the next level we measure and analyse investment activity at the level of rounds of funding. Funding rounds represent the number of times a company has been supported by investors. However, each funding round is like a fresh investment decision given that VC investors stage their funding to enterprises in multiple tranches to give themselves the option to abandon enterprises that do not continue to be promising. That means that for analyzing certain dimensions such as the funding provided to various industries the number of funding rounds may be a better measure of exposure. This implies that two rounds of funding provided to the same enterprise may be seen as two different investment commitments to the same sector. At the third level we aggregate and analyse investment activity in terms of the funding provided by individual funds to various enterprises in their portfolio. We define such a funding engagement as a transaction. Thus, we define transactions here as an investment by a given fund in a given enterprise. The fund may be participating in a syndicated transaction, where more than one fund may extend funding to the enterprise. If 'n' funds participate in a funding round they would be counted as 'n' different transactions. Each such transaction is the unit of an investment from a fund to an enterprise. Thus transactions are an appropriate measure for analyzing the supply side of the investment activity.

Given the classification of investments as above we find that during the period of our study from January 1999 to June 2016, the PE and VC industry funded 3699 enterprises in 5545 funding rounds across..... transactions. The mean number of rounds of funding received by an enterprise is With a standard deviation of...while the median number of rounds of funding is 1, indicating that 50% or more of the enterprises received one round of funding. On the supply side 849 funds provided Funding transactions, resulting in a mean of Transactions, the median number of transactions being.... And a standard deviation of..... transactions.

The yearwise number of deals is in Table 1 below. The number of rounds of financing saw a steady increase through the early years of the first decade of the new millenium until the financial crisis. After a decline in 2009 number of rounds of financing picked up in 2010, until it dropped for a year in 2013.

Table 1
Deals done year-wise and growth rate

Year	98-'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10	'11	'12	'13	'14	'15	'16
Deals	182	76	61	61	96	186	366	507	459	284	389	490	473	416	479	723	207
YoY%			-20%	0%	57%	94%	97%	39%	-9%	-38%	37%	26%	-3%	-12%	15%	51%	

*Based on data till May 2016

We cross tabulate the number of deals, measured in terms of rounds of financing, by year and by sector. (Results not presented here.) We do not find that the year on year increase in financing activity is influenced by temporal preference for specific sectors.

The regional distribution of deals is in Table 2 below.

Table 2(a)
Regional distribution of PE and VC funded enterprises

Region	Company (nos)	%
North	771	21%
East	94	3%
South	1350	37%
West	1261	34%
Central	30	1%
Overseas	161	4%
Unknown	25	1%
Total	3692#	100%

Of the 3699 enterprises that we find in the database we are not sure of the region in which seven of the enterprises are located.

The South accounted for the highest number of enterprises (37%) followed by West (34%) and North (21%). It is worth understanding why there is a locational concentration of deals in these regions. The bulk of deals the more prominent sectors also were located in these regions. Industry reports such as IVCA (1993) have noted similar regional concentration even in the early years of the industry. Wong et al (2011) note such geographical concentration in VC portfolios in the USA. Within each of the regions above, the spatial concentration is even more pronounced at the level of cities as may be seen from Table 2(b) below. Together the six cities account for 60% of all rounds of financing, with Mumbai, Bangalore and Delhi / NCR accounting for a bulk of the financing activities within these cities.

Table 2(b)
Citywise distribution of deals

City	No of Deals
Bangalore	696
Chennai	272
Delhi / NCR #	680
Hyderabad	270
Mumbai	910
Pune	137
Total	2965

NCR is National Capital Region which includes Delhi, Gurgaon and Noida. Gurgaon and Noida are practically part of the greater metropolitan area of Delhi.

We cross-tabulate the distribution of enterprises in various sectors across geographical regions. We find that an overwhelming 44% of all enterprises of all enterprises in the Southern region are from the IT and ITES sector. We see a higher fraction of businesses in more traditional sectors such as shipping, banking and financial services and manufacturing in the western region. The western region with Mumbai as its business hub and the commercial capital of the country has dominated industrial activity in the country historically. Many corporate houses operating in the traditional sectors are headquartered in Mumbai, leading to more entrepreneurial activity in that region in downstream and upstream sectors.

The concentration of high tech entrepreneurial activity at the level of a small geographical area has been documented in Saxenian (1996) in the case of Silicon Valley, while Florida (2014) notes that certain geographical locations tend to foster more of creative activity and Mellander and Florida (2012) note the concentration of certain types of skills in certain areas. While Bangalore has been referred to by the moniker “Silicon Valley of India” and is considered to be the leader among cities breeding technology entrepreneurship in India, a formal study of the factors leading to this concentration does not appear to exist. From a policy perspective this may be an interesting question to answer, given especially the somewhat intense rivalry that seems to exist between Hyderabad and Bangalore for the pole position in technology entrepreneurship.

Table 3
Spatial Distribution of Investment Sectors

Sector[1]	South	West	North	Overseas	East	Central	Unknown	Total	%Share
AAC	1	1	2					4	0.11%
AS	14	11	7	2				34	0.95%
AAAP	18	26	15	1	3	1	1	65	1.81%
AT&	15	29	18		4			66	1.84%
AUTC	12	29	23	2	4	1	2	73	2.03%
AUTM	5	9	7					21	0.58%
AVI	11	2	5	2				20	0.56%
BTC	56	56	14	10		1	1	138	3.84%
BPO	52	36	18	9	2		2	119	3.31%
BPC	18	22	13		4			57	1.59%
CHEM	3	24	5	1	3			36	1.00%
CTC	37	16	28	1	2	2		86	2.39%
COMM	32	17	16	13				78	2.17%
CD	6	6			1			13	0.36%
CN	13	17	8	1	4		1	44	1.23%
ET&SD	28	32	18	2	4		1	85	2.37%
ENER	5	14	8				1	28	0.78%
ENGG	49	52	15	5	2	4	1	128	3.56%
ENGSER	22	20	11		3	2		58	1.62%
ENTSW	95	42	28	39	2	1	2	209	5.82%
FS	65	106	34		9		3	217	6.04%
FFPFD	22	16	10		2	3		53	1.48%
HW	16	3	4	1		1		25	0.70%
HS	77	45	27	6	7	2	1	165	4.59%
HOT	17	23	12		4	1	2	59	1.64%
INFRA	52	45	26	2	5	3	1	134	3.73%
IPS	147	70	29	17	2		3	268	7.46%
LOGI	26	35	19		3		1	84	2.34%
MP&B	24	49	42	2	1	1	3	122	3.40%
MD	15	6	2	2				25	0.70%
MS	69	53	61	21	1	1	4	210	5.85%
OS	179	162	137	19	4		2	503	14.01%
OMM	12	38	19	1	10	2		82	2.28%
OMS	53	66	33	2	2	1	1	158	4.40%
OTH	20	18	6		2			46	1.28%
PCKG	5	10	8			2		25	0.70%
REST	12	20	18		3			53	1.48%
Total	1303	1226	746	161	93	29	33	3591	100.00%

[1] Expansion of the abbreviations is in the Table that follows.

Sector name	Sector Code
Advertising, Advisory and Consulting	AAC
Advisory Services	AS
Agrichemicals, Agriequipment and Agircultural Products	AAAP
Apparel, Textiles &Footwear	AT&
Autocomponents	AUTC
Automobiles	AUTM
Aviation	AVI
Biotech	BTC
BPO	BPO
Building Products and Construction	BPC
Chemicals	CHEM
Cleantech	CTC
Communications	COMM
Consumer Durables	CD
Consumer Non-durables	CN
Education, Training & Skill Development	ET&SD
Energy	ENER
Engineering	ENGG
Engineering Services	ENGSER
Enterprise Software	ENTSW
Financial Services	FS
Food, Food Processing and Food Delivery	FFPFD
Hardware	HW
Healthcare Services	HS
Hotels	HOT
Infrastructure	INFRA
IT Products and Services	IPS
Logistics	LOGI
Media, Publishing & Broadcasting	MP&B
Medical Devices	MD
Mobile Services	MS
Online Services	OS
Other Misc Manufacturing	OMM
Other Miscellaneous Services	OMS
Others	OTH
Packaging	PCKG
Restaurants	REST

Stagewise analysis of the rounds of financing is presented in Table 4 below. In line with the reasoning presented earlier, the analysis of the investment activity in terms of the stage of funding is based on the number of rounds of

funding provided across companies and not the number of funded enterprises. Early stage (33%) followed by Late Stage (23%) accounted for the highest number of investments. If early stage and growth stage were to be considered the provenance of venture capital investing, close to half the number of rounds of financing are concentrated in venture capital. It is also worth pointing out that the follow on financing provided to enterprises that raised venture capital in their first round of funding would be part of the set of private equity transactions. The large number of private investment in public enterprises (PIPEs) holding a share of 15% is an interesting phenomenon, possibly pointing to the PE industry filling a funding gap in the public market. Buyouts accounted for just 3% of the number of transactions suggesting that it is still early days. The relative slow evolution of the buyout market has been noted in Chokshi (2007) and Bain & Co (2011).

Table 4
Stagewise analysis of rounds of financing

Stage	Rounds (Nos)	%
Early	1869	34%
Late	1292	24%
Growth	793	15%
PIPE	708	13%
Growth-PE	361	7%
Buyout	187	4%
Other	130	2%
Pre-IPO	78	1%
Grand Total	5455	100%

On the demand side in addition to the variety of new industries that emerged enterprises across the entire life cycle from the seed stage to the late stage of buyout now raise VC or PE as appropriate. The VC and PE industry has also benefited from the developments in the rest of the ecosystem such as the development of the angel investment market.

VC has emerged as an important source of growth financing for innovative enterprises. One of the reasons for the same is that VC investors have and are utilize the expertise and network to help entrepreneurs manage important risks as the venture evolves as noted in Gorman and Sahlman (1989). VC investors are known to stage their funding to an enterprise in line with the progress made by the enterprise (Sahlman (1990)) . Further, they are known to syndicate their investments with other investors in order to manage their investment exposure to the enterprise as well as to draw on the expertise of investment managers in other funds as appropriate, according to Lerner (1994). Thillairajan and Deshmukh (2011) notes that the Indian VC market is predominantly made up of first round

financing transactions. We examine the breakup of transactions in terms of the round of financing to see the prevalence of follow on financing. We consider any funding beyond Round 1, namely Round 2 and beyond, as a case of follow-on financing, which might be used for financing the growth of the enterprise. Table 5 below classifies venture funded enterprises in terms of the number of rounds of funding raised by them.

Table 5
Enterprises classified in terms of numbers of rounds of funding raised

No of rounds	No of firms
>2	1195
2	659
3	261
4	96
5	53
6	18
7	13
8	11
9	13

Table 6 below provides the yearwise break up of funding between Round 1 and funding Round 2 and beyond. We consider successive rounds of funding that take place within a period of six months or more from each other as two distinct rounds. In line with Hellman and Thiele (2015) we believe that a gap of six months will mean that the funding decisions were based on sufficiently different information sets about the enterprise that they might be considered distinctive enough funding decisions. The data suggests that follow-on funding has been growing over the years as a percentage of the overall funding activity. At its peak in 2014 it accounted for close to half the number of funding transactions at a little over 46%. The drop in the percentage in the subsequent years could be due to the sharp increase in the number of first round financing transactions in 2015 and 2016. These recently funded enterprises might take a while to be ready for the first round of follow-on financing, namely, a second round of VC funding. Overall, the data suggest that the Indian PE and VC market is as much a provider of growth financing as it is a provider of startup capital. It is also an indication of the growing depth and breadth of the PE and VC market given that the investment management skills required for managing early and late stage investments are quite different as indicated in Da Rin et al (2011).

We further break down financing transactions beyond Round 2 yearwise in Table 7 below. The table supports the overall thesis of the steady deepening of the growth financing market in India. Bulk of the follow-on financing over

the years has been by way of Round 2 financing. Round 3 financing gathers momentum from 2005 whereas Round 4 financing gathers momentum from 2007 and Round 5 from 2011. We see instances of even further rounds of financing with one enterprise receiving as many as nine rounds of financing, suggesting that on the supply side the market seems to have the appetite to continue to fund enterprises so long as there are attractive investment opportunities. This has implications for funds as well as entrepreneurs. Funds need to have the ability and the capital to support their enterprises up to the second and third rounds at least. If incumbent investors do not continue to fund the enterprise, there is a risk that the follow-on funding may not go through. (See for example Sabarinathan and Velamuri (2017)). For entrepreneurs this means that they can grow their ventures up to a decent size and maturity before they exit the enterprise or go public. Overall, this may be seen as evidence of reduced instances of grandstanding of the kind documented in Gompers (1996). It may also hold out hope for entrepreneurs that they will get a longer runway for growing their enterprises and thereby a greater chance at taking the enterprise public.

Table 6
First Round and Follow On Funding Yearwise

	Round 1	Round 2+	Total	Round 1%	Round 2%
1998	17	0	17	100.0%	0.0%
1999	17	4	44	38.6%	9.1%
2000	112	9	121	92.6%	7.4%
2001	61	15	76	80.3%	19.7%
2002	43	18	61	70.5%	29.5%
2003	52	9	61	85.2%	14.8%
2004	70	26	96	72.9%	27.1%
2005	141	45	186	75.8%	24.2%
2006	301	65	366	82.2%	17.8%
2007	399	108	507	78.7%	21.3%
2008	315	144	459	68.6%	31.4%
2009	161	123	284	56.7%	43.3%
2010	224	165	389	57.6%	42.4%
2011	299	191	490	61.0%	39.0%
2012	287	186	473	60.7%	39.3%
2013	228	188	416	54.8%	45.2%
2014	257	222	479	53.7%	46.3%
2015	464	259	723	64.2%	35.8%
2016	120	87	207	58.0%	42.0%
	3534	1860	5455	64.8%	34.1%

Table 7
Roundwise, Yearwise Analysis of Follow-on Financing

Year	2	3	4	5	6	7	8	9	Grand Total
1998									0
1999	3	1							4
2000	7	2							9
2001	14		1						15
2002	15	3							18
2003	6	3							9
2004	21	3	2						26
2005	31	14							45
2006	48	14	3						65
2007	85	14	9						108
2008	113	24	6	1					144
2009	74	34	11	4					123
2010	99	42	18	4	2				165
2011	111	52	16	8	3	1			191
2012	95	53	19	13	4	2			186
2013	94	48	24	12	6	2	2		188
2014	105	58	28	23	5	2		1	222
2015	129	60	40	14	10	6			259
2016	52	18	5	7	3	2			87
Grand Total	1102	443	182	86	33	15	2	1	1864

We cross-tabulate the follow-on financing rounds across the various sectors to see if specific sectors have a higher likelihood of raising follow-on funding. Table 8 below presents the sectoral break-up of the follow-on funding (Round 2 and beyond.) The table indicates that in the initial years, up to 2006, follow-on funding was mainly to the Information Technology and Services industry. BPO services also accounted for follow-on funding in 2002 and 2003. With the deepening of the follow-on funding from 2006 onwards we see that other industries such as financial services, mobile and online services also began to receive follow-on funding.

Table 7

Sectoral Breakdown of Follow-on financing yearwise

Sector	1998 – 2005	2006 - 2010	2011	2012	2013	2014	2015	2016	Total
AAAP	0.76%	1.65%	1.84%	2.11%	2.40%	1.25%	1.52%	1.45%	87
AAC	0.15%	0.15%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	4
AS	0.45%	0.80%	0.82%	1.27%	1.20%	1.25%	1.24%	0.48%	50
AT&	1.81%	2.09%	2.04%	1.48%	1.92%	2.51%	0.28%	1.45%	96
AUTC	2.57%	2.99%	1.63%	1.69%	1.44%	0.63%	0.55%	0.97%	108
AUTM	0.91%	0.55%	0.41%	0.42%	0.96%	0.84%	0.69%	0.00%	34
AVI	0.60%	0.75%	0.82%	0.42%	0.00%	0.00%	0.41%	0.48%	29
BPC	1.96%	1.60%	1.22%	0.63%	1.20%	1.04%	0.83%	1.45%	73
BPO	11.63%	3.74%	0.82%	1.27%	0.96%	1.25%	1.38%	0.97%	184
BTC	8.01%	3.84%	2.45%	4.02%	3.85%	3.34%	3.04%	1.93%	219
CD	0.00%	0.30%	0.20%	0.21%	0.72%	0.63%	0.55%	0.00%	18
CHEM	0.76%	1.10%	0.82%	1.27%	0.24%	0.84%	0.55%	1.45%	49
CN	1.06%	1.05%	1.84%	1.27%	1.20%	1.67%	1.11%	0.48%	65
COMM	5.14%	2.89%	1.22%	1.90%	0.48%	1.04%	0.41%	0.97%	119
CTC	0.76%	3.09%	4.69%	3.38%	2.64%	2.71%	1.52%	0.97%	143
ENER	0.76%	1.35%	0.61%	0.00%	0.48%	0.21%	0.00%	0.00%	38
ENGG	1.21%	4.19%	4.08%	2.96%	2.88%	2.09%	1.11%	3.86%	164
ENGSER	1.21%	2.59%	1.63%	1.27%	0.24%	0.42%	0.97%	0.48%	85
ENTSW	3.78%	2.19%	3.88%	5.29%	8.17%	10.23%	10.93%	7.25%	290
ET&SD	1.36%	2.79%	4.08%	3.81%	1.20%	2.30%	1.80%	1.45%	135
FFPFD	0.45%	1.35%	1.43%	1.48%	1.92%	2.09%	1.94%	0.97%	78
FS	5.29%	8.13%	8.57%	7.82%	8.89%	7.31%	6.64%	8.70%	415
HOT	0.76%	2.34%	1.43%	0.85%	0.48%	1.46%	0.00%	0.48%	73
HS	1.66%	5.34%	5.92%	6.34%	8.17%	6.26%	4.01%	5.80%	282
HW	2.72%	0.60%	0.41%	0.00%	0.00%	0.21%	0.14%	0.00%	34
INFRA	2.27%	4.69%	5.71%	2.54%	2.40%	2.30%	1.38%	0.97%	182
ITPS	16.01%	8.78%	4.69%	6.13%	4.57%	5.85%	4.01%	4.83%	420
LOGI	0.60%	2.74%	2.04%	1.27%	1.68%	2.09%	2.49%	1.45%	113
MD	0.00%	0.45%	0.82%	1.48%	1.68%	0.84%	0.83%	0.97%	39
MP&B	5.14%	3.94%	2.24%	4.02%	3.13%	0.42%	2.07%	2.90%	179
MS	3.32%	3.44%	5.31%	4.44%	6.25%	7.52%	11.48%	15.94%	316
OMM	1.81%	3.04%	3.47%	2.33%	0.96%	1.04%	0.97%	0.48%	118
OMS	4.53%	5.64%	3.06%	3.59%	3.61%	3.97%	2.90%	1.93%	234
OS	6.95%	6.73%	16.94%	20.08%	20.19%	22.13%	29.05%	26.57%	814
OTH	1.51%	1.35%	0.61%	1.27%	0.72%	0.63%	0.55%	0.48%	57
PCKG	0.76%	0.75%	0.61%	0.21%	0.72%	0.42%	0.28%	0.48%	32
REST	1.36%	1.00%	1.63%	1.48%	2.40%	1.25%	2.35%	0.97%	79
Grand Total	662	2,005	490	473	416	479	723	207	

We analyse the time taken to mobilise the various rounds of financing. The time taken to mobilise has been measured as the time elapsed between the closure of the previous and the closure of the next round, both as mentioned in VI. This measure has to be interpreted with some caution though. The time taken could also be that a given enterprise may have delayed the process of approaching investors for the next round of financing. On average, though it would be reasonable to expect that enterprises start the process of raising the next round in time and as such the time elapsed on account of an early or a delayed start may cancel out. Thus the time elapsed that has been estimated may be viewed as the time taken to mobilize the next round of funding, assuming that the fund raising process was started on time. Initially we estimate the time taken to mobilise follow-on funding across all rounds and sectors. The mean time taken to mobilise these rounds was 833 days with a standard deviation of 674 days, the median was 610 days, the longest time taken was 4748 days. Owing to the high coefficient of variation in the summary statistics, further cuts in the data were taken. The results are summarized in Table 9 below.

Table 9
Time taken to raise follow-on financing in various rounds

Rounds	No of companies	Average	Std Deviation
1 - 2	1,102	902	719
2 - 3	443	799	648
3 - 4	182	684	538
4 - 5	86	615	429
5 - 6	33	534	283
6 - 7	15	543	329
7 - 8	2	258	65

The table indicates that the time taken to mobilise declines as the enterprise progresses by raising more and more capital. The standard deviation of the time taken suggests that the level of difficulty experienced by enterprises varies less as they progress. There could be several explanations for these results. Common to all the competing explanations is the possibility that the enterprise needs cash rapidly as it grows rapidly and / or is burning cash rapidly in an attempt to grow by spending heavily, for example, on customer acquisition or market development. On a positive note it could be said that the cash is required for a positive reason as the enterprise meets or exceeds plan substantially. In the process information issues and uncertainty get steadily resolved. By the time the enterprise enters the third round of funding it is quite plausible that issues relating to product development, initial customer acceptance and business model related issues are sorted out. It is conceivable that by then there is a well-rounded management team in place that has proven its ability to grow the enterprise and that the consortium of reputed investors have worked with the management team to put in place adequate governance systems and mechanisms. Thus investors coming into the fourth and fifth round would essentially need to spend time validating

issues relating to valuation and terms of funding. On the flip side the enterprise could be burning cash in its attempt to grow but may be trailing behind plan. In the latter case much of the funding may come from incumbent investors who are already invested in the enterprise and may therefore be engaging what in industry parlance is referred to as an instance of “throwing good money after bad”. This would however not appeal as an investment thesis to new investors who are investing in the enterprise for the first time. In order to examine this we analyse the number of investors in each round on average and the fraction of new investors in each round. These measures are summarized in Table 9 below.

Table 9

Number of investors in each round and number of new investors

Round	Count	New %	Existing %
Round 2	1148	58%	42%
Round 3	507	54%	46%
Round 4	226	50%	50%
Round 5	118	50%	50%
Round 6	42	42%	58%
Round 7	14	37%	63%
<i>Round 8</i>	<i>2</i>	<i>67%</i>	<i>33%</i>
<i>Round 9</i>	<i>3</i>	<i>100%</i>	<i>0%</i>

The results in Table 9 above indicate that as the enterprise raises more and more capital to fund its growth the incumbent investors bring in more new investors. This is in line with the literature on syndication which argues that syndicates serve two important purposes, namely to reduce the risk of exposure for incumbent investors as well as to leverage the skills, expertise and networks that new investors can bring to the enterprise.

We analyse the geographical distribution of the follow-on financing rounds. This analysis is motivated by the concentration that we see at the overall venture investment level as well as the larger presence of certain sectors in certain regions. The results of that analysis are presented in Table 10 below.

Table 10
Regional Distribution of follow-on funding

	1	2	3	4	5	6	7	8	9	Grand Total
South	36%	37%	41%	40%	42%	45%	53%	50%	0%	2029
West	34%	34%	31%	32%	35%	30%	27%	50%	100%	1846
North	21%	22%	22%	24%	20%	21%	20%	0%	0%	1161
Overseas	4%	2%	1%	1%	1%	0%	0%	0%	0%	194
East	3%	2%	2%	1%	1%	3%	0%	0%	0%	129
Central	1%	1%	1%	0%	0%	0%	0%	0%	0%	43
Unknown	1%	1%	2%	1%	1%	0%	0%	0%	0%	53
Grand Total	3591	1102	443	182	86	33	15	2	1	5455

The most noteworthy trend that is evident from the table is that as enterprises progress from Round 4 onwards, the South gains share of the subsequent rounds from the West and the North. It is worth exploring further what might explain this increase in share. We noted earlier that the ability of the enterprise to raise increasing rounds of funding may be viewed as an indication of quality. If that be so, it is worth understanding what the attributes of the enterprises in the South are that make them more investment worthy for follow-on funding rounds.

We analyse the number of enterprises from which investors could have achieved an exit during the period. VI provides two levels of data on exits, namely the creation of an exit path and the actual disposal of investments by investors. The latter measure is important from the point of view of measuring the investment performance of a fund or its portfolio or individual investments in the portfolio. However as part of the latter measure the complete disposal of the investment as well as the timing of the same have to be ascertained. The former measure merely establishes that the enterprise has made available to its investors a path to achieve liquidity. The investor may or may not choose to liquidate the investment. Further, the investor could choose to liquidate the investment at a time of her choice, in one or more tranches. This is especially true in the case of Initial Public Offerings (IPOs). Given these complexities we choose to work with the former measure, namely that if an enterprise has created a liquidity path for the investor we treat it as instance of a successful exit. A similar approach to measuring investment success have been adopted Hochberg et al (2007).

Table 11 below provides details of the exit paths created by way of IPOs and Mergers and Acquisitions (M&As), the two common exit routes for VC investors. VI's definition of M&A includes purchases of one VC investor's equity holding in an enterprise by another VC or PE fund, referred to in industry parlance as a secondary purchase,

as opposed to an acquisition by a strategic or financial acquirer. VI's classification of exits does not distinguish between profitable acquisitions and unprofitable acquisitions.¹⁷

Exit paths were created in the case of 768 enterprises. IPOs constituted a relatively small fraction at less than 20% of all exit paths that had been created. One reason for the lower fraction of exits through IPOs is the progressive difficulty for companies to access the IPO markets in India over the years due to the quality standards set by the Securities and Exchange Board of India through the regime, the listing standards of the two main stock exchanges, namely, National Stock Exchange and Bombay Stock Exchanges, the cost of making an IPO, investment preferences of institutional investors on the secondary markets which are in turn influenced by their investment and trading economics and the significant cost of post-IPO listing compliance, to name a few. A few securities exchanges targeted at smaller VC backed enterprises have been launched in the past three years. However, these are still at a nascent stage and the activity levels at those exchanges do not constitute a viable exit mechanism for VC backed enterprises.

Table 11
Exits Analysed Yearwise and In Terms of Exit route

Year	IPO	M&A	Grand Total
1999		1	1
2000	1	1	2
2001	1		1
2002	1	3	4
2003	2	13	15
2004	7	18	25
2005	16	19	35
2006	10	24	34
2007	16	42	58
2008	8	24	32
2009	7	27	34
2010	24	66	90
2011	5	57	62
2012	5	76	81
2013	2	66	68
2014	4	64	68
2015	13	94	107
2016	8	43	51
Grand Total	130	638	768

We analyse the fraction of enterprises that received various numbers of rounds of funding from one to eight that exited. As in the previous case we define exit as an event that creates an exit path. Table 12 a below presents the number of enterprises and Table 12 (b) presents the percentage of firms that exited of the total number of enterprises

¹⁷With the rapid proliferation of investments in certain sectors such as online commerce, acquisitions have been motivated by a new consideration, namely, recruiting of high quality team from among the founders and key founding employees of a startup. This type of acquisition has been referred to in industry parlance as an “acqui-hire.” See Ambre (2015) for example]

funded in that category. The fraction of enterprises that exited increases with the number of rounds of financing. This is in line with what might be expected: More the rounds of funding, the more developed the enterprise and the higher its attractiveness as an acquisition candidate. It is also possible that enterprises whose profitability is getting delayed may continue to attract funding from their investors in the hope of salvaging the investment already committed, an approach that is referred to among practitioners as throwing good money after bad. While an IPO is less likely to result in an unprofitable exit for an investor, M&As could result in unprofitable exits. Given the larger proportion of M&As the profitability of these exits would be worth examining to see whether providing more funding rounds results in creating better quality enterprises that lead to successful investment outcomes.

Table 11(a)
Exits from enterprises that received various rounds of funding

Rounds of funding	Yes	Only M&A	Only IPO	M&A + IPO	No Exit
1	342	312	28	2	2147
2	222	175	41	6	437
3	112	84	24	4	149
4	42	30	4	8	54
5	26	17	4	5	27
6	8	6	0	2	10
7	10	8	0	2	3

Table 11(b)
% of enterprises that received various rounds of funding that provided exits

Rounds of funding	Yes	Only M&A	Only IPO	M&A + IPO	No Exit
1	14%	91%	8%	1%	86%
2	34%	79%	18%	3%	66%
3	43%	75%	21%	4%	57%
4	44%	71%	10%	19%	56%
5	49%	65%	15%	19%	51%
6	44%	75%	0%	25%	56%
7	77%	80%	0%	20%	23%

Year on year IT & ITES accounted for the majority of the number of deals until 2004 after which the share of IT&ITES in the number of deals in a year dropped considerably until 2010. It picked up thereafter. The drop in share of IT&ITES was matched by an increase in deals in various other sectors

Supply Side of PE and VC

In line with the discussion earlier in this section we analyse the investment activity from the point of view of PE and VC funds.

849 VC and PE funds that had been active at various points in time during the period of study made 8884 investment transactions, measured in terms of individual transactions, including 792 transactions for which VI does not have details of investors. VC and PE fund management organisations typically manage more than one investment fund at a time. We track investment activities at the level of fund management organisations and not the individual funds from which they make investments. These investments were made in 3699 startup enterprises, representing 6044 rounds of funding. These investments resulted in 6313 enterprise relationships between the funds and the funded enterprise. 1195 companies received two or more rounds of financing as noted in Table 5 earlier. These data elements are significant because they provide an idea of the volume of activity in the VC and PE industry and by themselves provide sufficient incentive for academic research, notwithstanding the limited data that we have about individual transactions.

The descriptive statistics of these portfolios is presented in Table 13 below.

Table 13
Number of Investments made by VC and PE funds

Mean	7.42
Median	3.00
SD	14.30
Max	169.00
Min	1.00

VC and PE are acknowledged to be businesses managed by small, compact teams of like-minded professionals and are not considered to be scalable as such as noted in Gompers and Lerner (2001). One possible reason is the high degree of oversight that is needed to manage investment portfolios effectively. Practitioners believe that a partner in a fund should ideally not manage a portfolio of more than six active investments at any point in time. For a long time the VC and PE business was considered to be a local industry, confined to a country at the most, in terms of geographical spread until Patricof (1989) first formally noted the internationalization of VC. That said, with the increasing cost of human resources both at the level of investment funds as well as the funded enterprise the capital committed to individual enterprises has been steadily increasing. Fund management organisations have therefore tended to grow and build their reputation over time by raising successive funds and adding partners gradually and deliberately to manage the growing portfolio.

The data indicates that 580 of the funds had five investments or fewer, while 144 funds had greater than 10 investments. A mere 69 funds had more than 20 investments, a number that would be considered reasonable for a fund management team with at least four members at the partner level. If one were to consider 50 investments as a basis for classifying a team as having substantial presence only 19 of the fund management organisations qualified under this criterion. The combination of the fairly large number of enterprises that have been funded, the relatively large number of funds and the resulting low average number of investment transactions per fund suggest two possible explanations. One possibility is that VC and PE funds have been unable to grow their investment activity by raising successive funds and so have ceased to make further investments. This churn has interesting implications for professionals who wish to enter the VC and PE fund management business as well as for investors in VC and PE funds, commonly referred to as Limited Partners (LPs). It would be worth understanding better what makes funds churn so rapidly. The other possibility is that many or most of these funds that cease to make investments were investing out of a larger pool that was raised for investing across a larger regional geography of which India was one. So having exhausted their appetite for investments in India they ceased to make further investment. The fund management organization could continue to invest in some other geographies though. Or, an alternative explanation would be that for a large number of funds India was not part of their investment strategy but they made opportunistic investments in India. This is suggested by the number of fund management organisations that have made just one investment through this period. A cursory look at the funds and fund management organisations that have been active suggests that a large majority of the funds have been raised exclusively for India. Whatever the reason, the low average number of deals per fund persuades us to look at the rate of entry and exit of funds into India.

The number of funds that made their first investment in each of the years during the period of study and the last investments in each of the years is presented in Table 13 below.

Table 14
Entry and Exit of PE and VC Funds

Year	First Investment	Last Investment	First Investment Cumulative	Last Investment Cumulative	Drop Out Rate
1998	20	0	20	0	
1999	16	0	36	0	
2000	30	2	66	2	
2001	17	4	83	6	
2002	14	2	97	8	8%
2003	8	0	105	8	8%
2004	26	4	131	12	9%
2005	33	4	164	16	10%
2006	86	10	250	26	10%
2007	97	30	347	56	16%
2008	76	35	423	91	22%
2009	26	23	449	114	25%
2010	40	27	489	141	29%
2011	44	36	533	177	33%
2012	60	59	593	236	40%
2013	40	64	633	300	47%
2014	77	159	710	459	
2015	107	198	817	657	
2016	33	193	850	850	

We observe the month and year of the first investment as a proxy for the start of the fund's investment activity in India. In the table above we refer to that as the year of the first investment under the column "First Investment". Similarly we assume that if a fund has not made any fresh investment for two years after the year in which it made the last investment as recorded in the database the fund may have exited investment activity for some reason or the other. Whatever the reason for the cessation of the investment activity, the month and year of the last investment by a fund may be viewed as a proxy for the fund's last investment. In the table above we refer to that as the year of the last investment under the column, "Last Investment". We cumulate the number of funds "entering" and "exiting" the market according to this definition in the next two columns, "First Investment Cumulative" and "Last Investment Cumulative" respectively.

The table indicates that as of June 2016, the date of this study, there were at least three hundred funds that had not made a new investment for more than two years. We calculate a measure that we refer to as the Drop Out Rate. We define the Drop Out Rate as the % of the cumulative number of funds that committed their last investment two years prior to the year of measurement to the cumulative number of funds that had entered the market by the end of the year of measurement. We see this as an interesting measure of the rate at which fund management entities exit the fund management business in India. It would be worth comparing the drop out rates in the Indian PE and VC industry with those in other countries with well developed VC and PE markets. Equally it would be interesting to see what contributes to this drop out rate. There could be factors relating to the supply of good investment opportunities and intense competition for deals which has been documented in Gompers and Lerner (2000). It could be due to limited partners or investors in funds turning down subsequent fund offerings from the fund management team due to their unattractive investment performance. LPs are known to invest on the basis of the investment team's track record according to Kaplan and Schoar (2005). It would be worth examining if this in turn is due to the relatively less developed talent pool for investment management that is available in India and the implications of the same for initiatives for building VC and PE fund management capabilities in India.

We also analyse a few other measures relating to the investment and portfolio management activity of VC and PE fund managers in India. We calculate the time elapsed between the first and last investment for each of the funds as seen in our dataset as a measure of the longevity of the fund management organization's presence in the market. The measure is summarized in Table 15a below. We find that funds take a mean period of 51.8 months between the first and the last investment. The median of 34.5 months suggests that fewer than half the funds are active for even three years. The high standard deviation suggests a few of the funds may have been active for a relatively long time. This is consistent with the distribution of the number of investments in the portfolios of the various fund management organisations that we noted earlier, with a few funds having more than even one hundred investments.

An alternate explanation would be that the time elapsed between the first and the last investment could also be viewed as the time taken to commit the capital in a fund fully, assuming that all the investments made by a fund management organization were from a single fund. We noted earlier that successful fund management organisations grow by floating multiple funds in succession. However, if one were to assume that a large number of these fund management organisations had floated only fund during the period, the time elapsed pertains to the time taken for committing the capital from one fund. Given that most funds in India are either seven or ten year funds, fund managers would want to commit their investible funds¹⁸ within a four year period, referred to as the "commitment period"¹⁹. The median of 34.5 months suggests that more than half of the funds must be managing to commit their

¹⁸Investible funds are that part of the pool of capital raised in to a VC or PE fund that is available for funding enterprises. It is that part of the funds available net of management fees. See Metrick and Yasuda (2011) and Sabarinathan and Velamuri (2017) *op cit* for example.

¹⁹See Kaplan and Schoar (2005), p-4 and Sabarinathan and Velamuri (2017), *op cit*, for example. The idea of a commitment period may not be relevant to a corporate investor who invests out of a pool of capital that does not have a fixed term unlike a VC or PE fund. This is usually seen in the case of corporate VC initiatives and financial institutions such as banks or insurance companies that invest out of their balance sheet. Our survey of the investment management entities indicates that there may be

capital in the expected four year period. If the competition for deals is intense it would be reasonable to expect that fund managers would take a long time to commit their funds. The competition for investment opportunities in India has also been suggested in terms of the small universe of investible enterprises that has been estimated in Pandit (2014) in relation to other emerging economies such as Russia and China. However, the high standard deviation suggests that some funds may be struggling to commit their capital. This is yet another area that needs to be examined more closely to gain a better understanding of the competition in the market for PE and VC investment opportunities in India.

Table 15a
Time taken to Invest Funds (in months)

Mean	51.8
Median	34.5
SD	56.6
Max	223.2
Min	0.0

Given that a number of funds made only one investment and further that a number of transactions have not been identified to any known or named fund the statistics for time taken to invest funds after removing the single investments and the investments that have not been identified to any specific funds are presented below in Table 15(b). We remove the data relating to funds that made only one investment because there is a higher likelihood that these funds had made an opportunistic investment without a well-developed investment thesis for India and so they may not depict the business dynamics of an India-focused fund. Predictably the dispersion is lower, skewness is lower and the mean period is higher, suggesting that many of the funds have been active for longer than six years. Alternately these results could also make an even more compelling case that some funds were struggling to deploy their capital.

only three or four such entities among the 849 fund management organisations. Intel Capital would be an example of the same. Our analysis of the mean time taken to invest would apply for such investors as well. However the contractual requirement of a fixed commitment period may not apply to them.

Table 15 bTime taken to Invest funds, net of funds that made just one investment

Stats	Months
Mean	77.6
Median	75.1
SD	52.4
Min	1.0
Max	222.2

We find that there are two competing explanations for the time elapsed between the first investment and the last investment by a fund management organisation. The longer time may be indicative of the longevity of the fund on the one hand or the difficulty in finding deals due to intense competition on the other. If the time elapsed were to be higher merely on account of difficulty in finding investment opportunities it would be reasonable to expect that the correlation between the time elapsed and the number of deals done is low. We find that the correlation between the number of investments and the duration of the activity of the fund seems to be fairly high at 0.44, suggesting that funds may be committing their capital within the commitment period in spite of competition for deals, because of a contractual provision that allows investors in funds to cancel their contribution to the fund. But that does suggest that funds may be constrained either to invest in unattractive enterprises or at unattractive valuations or both, the consequences of which could be expected to be reflected in the performance of the fund. This in turn, as noted earlier, has implications for fund managers as well as for investors in funds targeted at Indian enterprises.

VC funds are expected to specialise in certain sectors so that they can engage with their portfolio companies more meaningfully in the post financing stage. This also gives them a competitive advantage in the market for investment opportunities. It would be reasonable to expect therefore that the portfolios of individual funds would be concentrated in certain industries in which they specialize. This has been acknowledged in the reference to the high idiosyncratic risk in VC portfolios in literature that examine the risk-return performance of VC and PE portfolios. (See for example Cochrane (2005), Ljunqvist and Richardson (2003) and Kaplan and Schoar (2005)). At an industry level though we note a fairly diversified investment portfolio from Table 3 above which shows that only four sectors account for more than 5% of the total number of investments: BFSI (6.4%), Energy (6.7%), Healthcare and life Sciences (9.0%), Manufacturing (9.4%) and IT & ITES (38.1%).

We examine the degree of concentration of an investor's portfolio by calculating the percentage of the number of transactions of the sector that has the highest number of investments in the portfolio of a given fund management organization. Out of a total of 8880 transactions across 849 funds we analyse the performance of those funds that had ten or more investments which accounted for 6059 (68.33%) of the transactions, based on the premise that at least ten transactions are required to suggest a meaningful specialization. A high percentage would indicate an

investment strategy that is based on specialization while a low percentage would suggest a more diversified investment strategy.²⁰

Table 15 below summarises the results of that analysis. The first column of the table with the title “No of Investments” suggests a wide dispersion in the number of investments in individual portfolios. The “No of Sectors” indicates the number of different sectors that are present in the portfolios of various funds. This measure suggests a fair degree of concentration in the portfolios. This result is noteworthy considering that we include only those funds that have ten or more investments in their portfolios. The third column, “Percentage” measures the ratio of the sector that accounts for the largest number of investments in a given portfolio to the total number of investments in that portfolio. Given the average number of three sectors in any portfolio the concentration measure of 33% is not surprising. What is noteworthy though is that the lowest concentration is 9% and that the variability of concentration as measured by the standard deviation is not high. Overall, fund managers in VC and PE industry in India appear to have followed a high degree of specialization in terms of the sectors in which they invest.

Table 16
Portfolio Concentration

Statistic	No of Investments	No of Sectors	Percentage
Mean	33.29	2.91	0.33
Median	19.00	2.30	0.30
Std Devn	37.06	1.91	0.16
Max	281.00	11.80	0.90
Min	10.00	1.00	0.09

Policy Implications, Scope for further Research and Conclusions

The work in this paper has many interesting policy implications. Much of the policy discussion relating to VC and PE has focused on providing startup capital. This paper suggests that it is time that policy also looked at questions relating to providing growth funding to enterprises. It also suggests the need for augmenting the supply of trained VC fund managers. This could be facilitated by initiatives to support the launching of a large number of start up funds that can spawn a new cohort of professional fund managers. One of the key contributions of the Small Business Act was to create a cadre of brilliant venture fund managers like William Draper III. It also points to the need for creating the circumstances for many of the smaller towns to attract VC investments. Cities like Vishakhapatnam and Coimbatore in the South, Jaipur and Chandigarh in the North, Nagpur and Nasik in the West

²⁰We are not suggesting that specialization is desirable or essential from the point of view of investment performance outcomes. In order to make a case for that claim, the concentration has to be in an area or sector where the fund manager can credibly claim expertise. We are examining that connection in a separate paper by one of the authors, which is in progress.

are cities that have the potential to bring up highly successful enterprises. The case of the eastern region needs to be studied on a priority basis.

This paper identifies a large number of areas for further research. What are the kinds of enterprises that seem to grow beyond Series A? How do they manage their follow-on fund raising? What is the kind of engagement between the investor and the investee across stages of funding? What are the conditions that lead to higher likelihoods of profitable exits? On the supply side what are the attributes that lead to success in venture fund management? How is the extant institutional regime supporting or hindering the venture fund management industry? How has the regime evolved considering the number of committees that have been appointed to offer suggestions to creating a more benign environment for venture investing? Most importantly it points to the need for a serious initiative to create data that academic research can use in collaboration with the existing data providers. For example, basic data on the dollar value of funding rounds is not available presently.

This paper finds that overall the VC and PE industry has been coming of age in the past fifteen years. From the small beginnings in the late eighties the industry has grown in terms of breadth, depth as well as sophistication in fund management practices. It has shown that it has the capacity to support enterprises across a range of sectors that have the potential and promise by providing funding across their various stages of development. This has in turn led to a relatively large number of enterprises getting acquired or going public. It has also demonstrated creativity in terms of coming up with structuring mechanisms like externalisation that will allow Indian enterprises to create organizational platforms that will enable them to compete in the global market. Studying the VC industry in India can be of use in more ways than one. It will lead to ways in which the growing asset management industry in India can benefit from it as an alternate asset class as institutional investors elsewhere in the world have done successfully. It will make the industry a more effective and pervasive enabler of starting up enterprises in India as well as create a funnel of great and growing set of investment opportunities for the public securities market, a role that has been acknowledged in the west. As a corollary it will also turn the industry a key driver of economic growth.

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