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RESEARCH ARTICLE

A GEOGRAPHICAL CONCENTRATION OF INDIAN VENTURE CAPITAL INVESTMENT

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ABSTRACT

Venture capital investment is an important component of financial capital. The geographic concentration by both venture capital firms and venture capital financed companies in six top cities-Bangalore, Mumbai, Delhi, Chennai, Hyderabad and Gurgaon. The reason is based on the success rate of venture capital backed investments in an area, concentration on high-technology industry, industrial specialization, technological competencies, and product specialization. The object of this paper is to study the geographical concentration of venture capital investments in India. The data is collected from Venture Intelligence for the period 1998 to 2012 and also analyzed for the period of 15 years by using the tools and techniques of descriptive statistics and ANOVA. The result shows that the amount and number of investments of venture capitalist are different across the metros due to location decision. Geographical location is also significant related to venture capital investment. With the analysis of the data it shows that alternative hypothesis is accepted that is both number of investments and amount of investments are not same across the metros.

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INTRODUCTION

Investors always focus on growing countries and regions. Growth is an important indicator when they consider VC investments. The top cities in India are full of business opportunities and it is an ideal environment for the development of entrepreneurship. The managerial skills, experience, and government regulatory laws greatly enhance the influence of venture capital investments in top cities. Venture capital is important from a geographic perspective for two primary reasons. First, the venture capital industry and its investments are closely related in a region (Sorenson and Stuart, 2001; Cooke, 2001), and second, the industry have a positive impact on regional development. Venture capital has been growing rapidly in developing countries since 1990, but not many researchers have been done on VC in developing countries so far. This research article contributes to the knowledge of VC by studying what drives VC investments in top cities. The Venture capital companies also play an important role in the economy.

Venture capital

Liles (1974), in his definition of venture capital provides four characteristics:

1. Investment in any high risk venture.
2. Investment in unproven ideas, products, or start-up situations. This characterizes seed capital.

3. Investment in existing firms those are unable to raise funds from conventional public or commercial sources.
4. Investment in large publicly traded companies and possibly acquiring controlling interest in such companies where uncertainty is significant.

An additional characteristic is the importance of equity and high growth potential as recognized by Gompers and Lerner (1999). They define venture capital as; 'independently managed, dedicated pools of capital that focus on equity or equity-linked investments in privately held, high growth companies' (p.11).

Review of Literature

Tyebjee and Bruno (1984), in their study entitled "*A Model of Venture Capitalist Investment Activity*," attempted to ascertain the factors, which influence the investment decisions of VCFs in the US. They found five categories of decision criteria: market attractiveness, product differentiation, managerial capabilities, environmental threat resistance, and cash-out potential. **Zook (2002)**, in his study entitled "*Grounded Capital: Venture Financing and the Geography of the Internet Industry, 1994-2000*", this article argues that the regional distribution of venture capital investing played a central role in determining the location of new internet start-ups. **Dafna and Raphael (2007)**, in their paper entitled "*Venture Investments in Israel-a Regional Perspective*" explained the comparison between different types of venture investors shows that local venture capital funds lead to the large concentration in the metropolis, in comparison with foreign venture investors.

Chen, Gompers, **Kovner and Lerner (2009)**, in their working paper entitled “Buy Local? The Geography of Successful and Unsuccessful Venture Capital Expansion”, documented the geographic concentration by both venture capital firms and venture backed companies in three cities-San Francisco, Boston, and New York, by identifying geographic location is significant related to outcomes.

Thomas and Carl (2010), in their research article entitled “A Geography of the Venture Capital Industry in the U.S”, identified due to regional concentration of VC activity, there is an existence of a regional mismatch in the supply of and demand for such funds.

Objective of the Study

The objective of this paper is to study the geographical concentration of venture capital investments in India.

Research Hypothesis

- Across the metros numbers of investments are not same for venture capitalists
- Across the metros amount of investments are not same for venture capitalists

MATERIALS AND METHODS

To achieve the objectives researcher gathered the data from venture intelligence for the period 1998 to 2012. The analysis was performed using statistical software SPSS version 18. For quantitative data mean, median, variance, standard deviation and average were calculated. ANOVA is employed to test the research hypothesis. A significance was assumed at $p < 0.05$ for interpretation of results of tests of significance.

RESULTS AND DISCUSSION

Table 1. Indian Venture Capital Investments by Location

All Region		
Year	No Of Inv.	Amt (\$Mn)
1998	9	58.4
1999	31	61.15
2000	96	288.41
2001	61	179.5
2002	33	155.84
2003	29	143.23
2004	31	165.59
2005	47	232.12
2006	123	625.56
2007	164	866.17
2008	182	948.44
2009	117	504.39
2010	155	723.91
2011	223	1087.83
2012	230	846.73

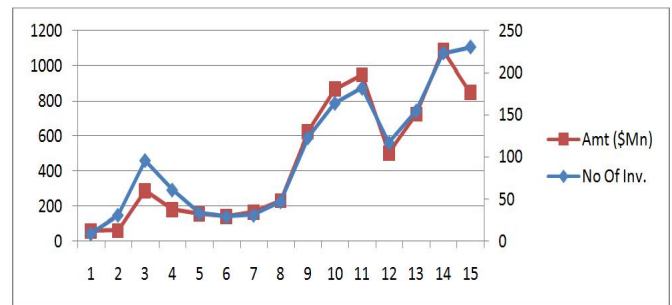
Source: IVCA, and TSJ Media 2005-2012

Graph (2) shows there is a relationship between number and amount of investment of Indian venture capital with a R^2 of 93.47%.

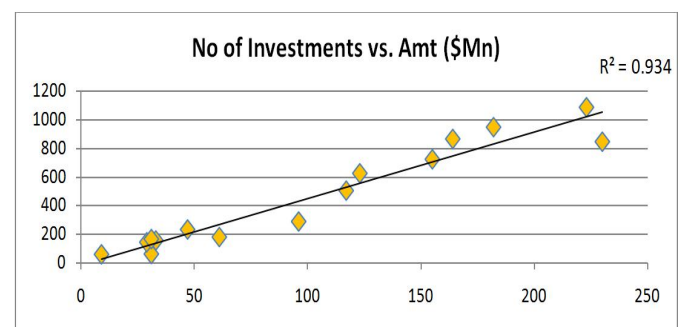
Table (1) shows the Total numbers of investments and amount of investments of all Indian regions-North, South, East, West, Central and Overseas from 1998 to 2012.

H₀: Across the metros numbers of Investments are same for venture capitalist.

H₁: Across the metros numbers of Investments are not same for venture capitalist.



Graph 1. Pattern between No. of Investments and Amount of Investments



Graph 2. Relation between No. of Investments and Amount of Investments

Table 2. Descriptive Statistics of Number of Investments across the Metros

Groups	Count	Sum	Average	Variance
Bangalore	16	465	29	481.26
Mumbai	16	379	23	295.56
Delhi	16	198	12	190.78
Chennai	16	109	7	21.23
Hyderabad	16	108	7	31.00
Gurgaon	16	62	4	10.38

From the Table (2) it is understood that, Bangalore leads in number of investments on average of 29 while compared with other cities, followed by Mumbai on average of 23, Delhi on average of 12, Chennai and Hyderabad on average of 7 and Gurgaon on average of 4.

Table 3. ANOVA (Number of Investments)

Source of Variation	SS	df	MS	F	P-value
Between Groups	8476.177083	5	1,695.24	9.87	0.00
Within Groups	15453.3125	90	171.70		
Total	23929.48958	95			

Table (3) shows the details of ANOVA. It is employed to test the above research hypothesis, the result show F value is 9.87 and P value is $< .05$, null hypothesis is rejected and alternate hypothesis is accepted that across the metros numbers of Investments are not same for venture capitalist.

H_0 : Across the metros amount of Investments are same for venture capitalist.

H_1 : Across the metros amount of Investments are not same for venture capitalist.

Table 4. Descriptive Statistics of Amount of Investments across the Metros

Groups	Count	Sum	Average	Variance
Bangalore	16	1,940.47	121.28	8,246.04
Mumbai	16	1,638.99	102.44	8,439.22
Delhi	16	990.30	61.89	5,786.89
Chennai	16	458.07	28.63	690.72
Hyderabad	16	518.37	32.40	820.36
Gurgaon	16	332.04	20.75	490.83

From the Table (4) it is understood from the above table, Bangalore leads amount of investments on average of 121.28 while compared with other cities and least is Gurgaon with an average of 20.75.

Table 5. ANOVA (Amount of Investments)

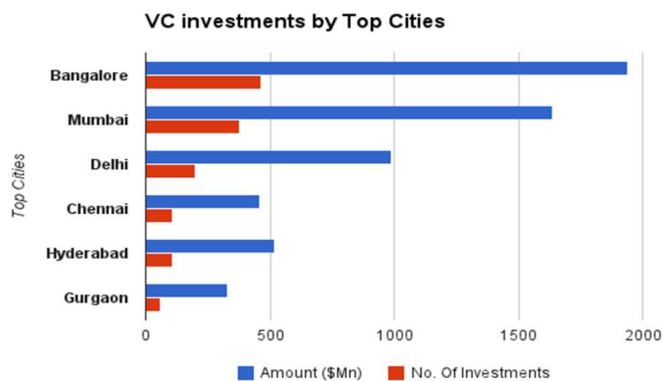
Source of Variation	SS	df	MS	F	P-value
Between Groups	141,390.08	5	28,278.02	6.93	0.00
Within Groups	367,110.88	90	4,079.01		
Total	508,500.97	95			

Table (5) shows the details of ANOVA, employed to test the above hypothesis, the results shows F value is 6.93 and P value is $<.05$, therefore null hypothesis is rejected and alternate hypothesis is accepted that across the metros amount of Investments are not same for venture capitalist.

Table 6. Venture Capital Investments by Top Cities

City	No. Of Investments	Amount (\$Mn)
Bangalore	465	1940.47
Mumbai	379	1639
Delhi	198	990.3
Chennai	109	458.07
Hyderabad	108	518.37
Gurgaon	62	332.04
Descriptive statistics		
Min	62.00	332.04
Max	465.00	1,940.47
Mean	220.17	979.71
Median	153.50	754.34
Stdev	164.69	672.64

Source: IVCA, and TSJ Media 2005-2012



Graph 3. VC investments by Top Cities

Table (6) shows the major top cities in India which were attracted the venture capital investment in India. In case of city wise investment, it appears that Bangalore has attracted USD 1940.47 million as venture capital, which plays first in India, followed by Mumbai, Delhi, Chennai, Hyderabad and Gurgaon. Bangalore remains the hotbed of the VC industry, but activity is spreading across the country especially to Mumbai, Hyderabad and Chennai.

Conclusion

The location of venture capital firms matters for the development of entrepreneurial firms because venture capitalists provide more than just risk capital. They typically invest in early stage and high technology companies where the risk and uncertainty is more. Since venture capital funding provides for staged financing and venture capitalists are constantly evaluating their portfolio companies is the first reason for location decision. Another reason is the success rate of venture capital backed investments in an area, concentration on high-technology industry, industrial specialization, technological competencies, and product specialization. The results shows that the geographic concentration by both venture capital firms and venture capital financed companies in Indian six top cities- Bangalore, Mumbai, Delhi, Chennai, Hyderabad and Gurgaon because of high technology, industrial specialization, product and service specialization. With the above analysis of the data is shows that alternative hypothesis is accepted that is both number of investments and amount of investments are not same across the metros.

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