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INDIA IN LEAGUE OF DEVELOPED NATIONS THROUGH SERVICE SECTOR LED GROWTH: A CASE OF VENTURE CAPITAL AND PRIVATE EQUITY INVESTMENTS

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ABSTRACT
Over the last two decades service sector is the fastest emerging sector around the globe, providing more than 60 percent of global output and, in many countries, an even larger share of employment. The growth in services has also been accompanied by rising share of services in world transactions. The accelerated growth of Indian economy focuses specifically on the services sector because of the central importance of services to India's current economic expansion. India's recent growth has been led by the dynamism of its services sector particularly high-end, knowledge-intensive services exports with well-buffeted background of huge quality manpower. Its growth has in fact been higher than the growth in agriculture and manufacturing sectors. Services have consistently grown at a faster pace than the economy as a whole since 1991 with the opening up of global business opportunities to the technocrats

Developments in India's services sector potentiality have worldwide significance, given the rapidly increasing importance of India's economy, which could be the third-largest in the world by a significant margin in 2050, measured at market exchange. Service sector is a major contributor to India's strong recent GDP growth of 9.4percent with more than 60percent of its own share in the last year. The service sector has in fact its significant role in placing India *numero-uno* in global business competitiveness. The service sector led growth of Indian economy is picking up the tab by new sources of innovative financing and investments, which have mainly emerged as an output of liberalization. Thus, the emergence of venture capital in the post LPG era has widened the scope of new and innovative source of finance. The venture capital has had its impugning impact on service sector of Indian economy as well. The fast changing modus operandi of global service sector has now recognized the significance of venture capital and private equity as the most vibrant industry in the financial market today. In the rapidly changing Indian economy, venture capital is now a critical source of finance to commercialize the innovation and new ideas especially in the realm of intellectual capitalization.

Purpose of the Study
The present paper makes an earnest attempt to identify and discuss critical issues with respect to service sector led growth of Indian economy in post LPG regime and to find out the role of innovative sources of financing in the accelerated growth of service sector. The paper also takes into consideration the performance of services at the aggregated level in terms of their shares in GDP with the aggregated share of services in venture capital/private equity. In this paper the authors have also made an attempt to find out relations between share of service sector in VC/PE investment and total GDP through correlation and multiple regression models. Accordingly the authors have categorized different realms of venture capital/private equity as production and services. The services have been further classified into IT and non IT for the sake of study.

Methodology
The study is mainly based on the secondary information from the Annual Reports of Government of India and Government agencies especially Indian Venture Capital Association (IVCA), Planning Commission, Export Promotion Board of India and Economic surveys of different issues. The Authors also made use of Business journals, books and research papers concerned with the subject matter. Furthermore the authors applied suitable statistical tools such as Mean and SD, for averages CAGR, Minima and Maxima for analyzing the degree of adequacy of the statistics.

The study has used simple and multiple correlation technique along with the T-test to support the hypotheses of the study. The simple regression equation has been applied while estimating the relationship between the GDP growth and VC/PE investments through out the period under reference. The multiple correlations have been used for the test of interrelation between the GDP (services), VC/PE (services) and Service exports for the referred period under study.

Findings
The global private equity boom since 2001 has also had its vital and strategic role in diversified financing pattern of venture capital. The statistics of Indian venture capital for the last 15 years reveal that the services sector has an average mind-boggling percentage share of 67percent with an average annual growth of 66percent justifying the larger chunk of share of services in GDP and its consequential multiplier effect in total growth rate. On a whole any increase in the investment of services led venture capital has its strategic role in the increase of GDP and Service exports of Indian economy. The service sector within

venture capital especially IT and IT enabled services has been important for country's services led growth after liberalization. But now many other services are growing such as KPO and it is also supposed that retailing industry will be cause of next boom for Indian economy; similarly telecom sector is also expected to grow rapidly in near future. So in all these new emerging services there will be need of venture capital and private equity which should be perforce promoted by the Government with further relaxation of rules and offerings of attractive incentives. The service sector is the only sector which can take India to achieve cherished target of becoming one of the developed nations of the world by 2020.

Research Limitations

The total GDP growth is not only dependent on Venture Capital but also various accumulated factors which have not been considered in the study. The coordinated information is limited on venture capital in India due to duplications and absence of a common agency.

Originality/Value

The studies on the basis of various aspects of the Indian venture capital investments have emphasized only common aspects of growth and trends of VC/PE and its implications on the total formal sectors. A lot of studies made on Indian service sector have not analyzed venture capital/ private equity as significant factor. Therefore there is a gap of studying the venture capital investments in relation to the countries total growth. The present paper would go to touch upon these aspects of VC/PE in India. It is hence a novel effort of the authors to study this particular aspect.

KEYWORDS: VC/PE: Venture Capital/Private Equity, LPG: Liberalization Privatization and Globalization, Service sector, IT and ITES: Information Technology and Information Technology Enabled Services, VCFs: Venture Capital Funds

INTRODUCTION

Over the last two decades service sector is the fastest emerging sector around the globe, providing more than 60 percent of global output and, in many countries, an even bigger chunk of share in employment. The growth in services has also been accompanied by the rising share of services in world transactions. The accelerated growth of Indian economy emphasizes particularly on the services sector owing to the significance of services to India's recent economic growth, which has been led by the dynamism of its services sector predominantly high-end, knowledge-intensive services exports through well trained and exuberant man power. Its growth has been more than the growth in other sectors viz agriculture and manufacturing sector. Services have consistently grown at a faster pace than the economy as a whole since 1991 with opening up of the global business opportunities to the technocrats. The present scenario of services sector led growth of Indian economy has influenced venture capital/ private equity too.

Review of Literature

In the following paragraphs a succinct review of literature on the subject matter of VC/PE is prepared to identify the research gap and thus to make appropriate framework of the study. The study made by Australian Government (2007) on Indian service sector, traces out the whole aspects of Indian services sector. The study finds out that the investment opportunities in Indian service sector should be exploited by the investors of Australia to the brow. Bubna Amit's (2007), research paper on 'Impact of Private Equity and Venture Capital on the Indian Economy' is based on survey of firms of service sector pertaining to private equity which says that VCs are performing in a better way.

Banga Rashmi's (2006) has critically analyzed the accelerated growth of Indian services sector in an atmosphere of huge unemployment and poverty which consequently led to find out new arena of investment in services. The author rightly feels that to eliminate the critical issues it is necessary to bring innovative investments. Another significant study on the venture capital in India has been done by Aggarwal Alok (2006), (Evalueserve Study Report). The study has summarized that the Venture Capital market in India which seems to be getting as hot as the country's famous summers. However, this potential over-exuberance may lead to some stormy days ahead, based on sobering research compiled by global research and analytics services firm. Nirvikar Singh (2006) emphasizes the contribution of new and emerging services in rapid growth of Indian economy. It also focuses on the importance of industrialization of services sector in rapidly growing economy

The study of Mani Sunil, (2005), characterizes the role of the Indian state in promoting innovation in its manufacturing as well as service sector. The study revealed that the chemicals and pharmaceutical sectors, accounting for the largest share in R&D investments and in the number of patents granted, dominate the country's services led growth of manufacturing sector. D Nagayya's (2005), paper on 'Venture Capital—Recent Trends in the Liberalization Context,' reviews development of Venture Capital Funds and Patten of investment after 1991.

Bowonder and Sunil Mani (2003), present an overview of evolution of venture capital support for innovation in India. The study describes the governmental supported schemes and a large number of venture funds currently in operation especially for innovative IT and ITES services. The study of Jim Gordon and Poonam Gupta (2003), analyzes the factors behind the growth of the services sector in India. The study also shows that growth acceleration of the services in the 1990s was mostly due to fast growth in communication services, financial services, business services (IT) and community services where the venture capitalists are still emphasizing.

Dossani Rafiq and Kenney Martin's (2001), paper entitling 'Creating an Environment: Developing Venture Capital in India,' illustrates that the earlier patterns of growth or failure in venture capital industries in other nations provide the new role of venture capital in India. Lavanya Marla (2001), discusses comparison of venture capital worldwide status like State and local government policies to encourage VC formation and finally to find out the importance of the venture capital led growth as a model for overall development like developed countries.

The significant report by (Shri Nitin Desai, Chairman) the Planning Commission (2006) on Venture Capital i.e. 'Technology Innovation and Venture Capital,' Dr.Lahiri Ashok, (2003), The Advisory Committee on Venture Capital in India, and another report of K.B. Chandrasekhar, (2000) Committee have given set of recommendations which led SEBI to issue guidelines for venture capital investment in specific industries especially in services.

Research Gap

The studies on the basis of various aspects of the Indian venture capital investments have emphasized only common aspects of growth and trends of VC/PE and its implications on the total formal sectors. A lot of studies made on Indian service sector have not analyzed venture capital/ private equity as significant factor. Therefore there is a gap of studying the venture capital investments in relation to the countries total growth. The present paper would go to touch upon these aspects of VC/PE in India.

Scope and Objectives of the Study

The study aims to trace out the role of venture capital in increasing share of services sector in GDP since liberalization. The study also seeks to identify as to whether there is any significant relation of sectoral investment pattern of venture capital with share of services in GDP and export of services from India. The study on services led growth on Indian economy with a case of venture capital would cover the span of 15 years of venture capital investment and total factors of GDP especially share of service sector. It would analyze the relationship between GDP, services of export VC/PE on the basis of the following objectives.

- To analyze role of service sector in total GDP in post liberalization era
- To make comparative study of service sector in GDP across several nations of Asia
- To study relationship with VC/PE with GDP[service sector] and Services export
- To examine dependence of GDP(services only) on VC/PE and export of services
- To find out inter-relations between services of exports with GDP(services) and VC/PE.

Hypotheses of the study

In the total Venture Capital investment the services sector is predominant factor as it is dominating the country's overall GDP**.** Thus, it is justifiable that the growth rate of GDP with total venture capital movements in India for a particular period should be critically examined and studied. The study on the services led growth of Indian economy has therefore been made on the basis of the following hypothesis:

- The null hypothesis (Ho_1) assumes that there is no significant relationship between the total country's GDP growth rate and the total investment in venture capital/private equity investment since liberalization.
- The null hypothesis (Ho_1) assumes that there is no significant interdependence between the Gross Domestic (Services only) Product, net venture capital investment in service sectors and Gross Export of India's Services since economic liberalization.

Research Methodology Adopted

Though the study is mainly based on the primary sources of secondary information that has been published in Annual Reports of Government and Government agencies especially Indian Venture Capital Association (IVCA), Planning Commission, Export Promotion Board of India and Economic surveys of different issues. The Authors also made use of Business journals, books and research papers concerned with the subject matter. Furthermore the authors applied suitable statistical tools such as Mean, SD, CAGR, Minima and Maxima.

The study has used simple and multiple correlation technique along with the T-test for the test of hypotheses of the study. The simple regression equation has been applied while estimating the relationship between the GDP growth and VC/PE investments through out the period under reference. Also the't' statistic is being calculated form the correlation of GDP growth and total VC/PE investments. The Multiple correlation equation= $R_{1.23}$ and simultaneously $R_{2.31}$ and $R_{3.21}$ has been estimated in test of linier relationship between service exports, GDP (services) and services led VC/PE investments in India through out the period under reference. Multiple correlation (R) and coefficient of determination R^2 are also being estimated in each cases along with ***t***-statistic of each variables by applying equation, $\mathbf{t} = \frac{r}{\sqrt{1-r^2}} * \sqrt{n-2}$

Services Led Growth of Indian Economy: A Perspective

Following the trade liberalization in 1991, the Indian economy adopted a path of rapid growth rate; particularly it witnessed a high growth rate of service sector while growth rate of industry was comparatively subdued. As a result, the share of services in GDP is witnessing as GDP of advanced country whereas India's per capita income so far remains that of a low income country. The Indian services sector remained one of the most significant sectors of the Indian economy contributing nearly 60 per cent of the GDP in 2006-07. The sector has come to play an increasingly dominant role in the economy accounting for 68.6 per cent of the overall average growth in GDP in the last five years between 2002-03 and 2006-07. While the Indian economy grew at the rate of 9.4 per cent in 2006-07 against 9 per cent in 2005-06, services grew at a remarkable rate of 11 per cent in 2006-07 against 9.8 per cent in 2005-06. It has been observed that the services sector continued to record double-digit growth in the current fiscal year. (Banga Rashmi (2006)

The high end growth of service sector can be analyzed through the individual sub sector in the year 2006-07. It is discernible that the trade, hotels, transport and communication grew by a robust growth rate of 12 per cent. Financial services (comprising Banking, Insurance, Real estate and Business Services) grew by 11per cent as against 10.8 per cent. Community, social and personal services grew at the rate of 7.6 per cent during the referred period. The communication sector has recorded robust growth with 34 million telephone connections (fixed plus cellular) in April-August 2007 which is 55.4 per cent higher than the corresponding period last year. Cargo handled at major ports increased by 14.2 per cent. Import and export cargo handled by the civil aviation sector increased by 23.5 per cent and 5.4 per cent, respectively during the period under review.

Table 1 and Figure 1 on the Service Sector perspective of Indian economy are showing clearly the contribution of services in GDP which have registered higher growth rate than that of total GDP. Table also furnishes data about the future perspective of services in India which has a vital role in promoting and accelerating GDP growth. It is expected to reach 32000 billion rupees in 2015 which is a matter of pride for a developing nation like India. In India, the service sector has a chunk of share according for almost 60percent of the GDP in the last year with an aggregate amount of Rs.23025 billion. While in comparing to the figures of 1991-1992 of Rs. 3413 billion, it is a mindboggling proportion which enabled India to take the front seat for global competence. It is expected that India's share in world service exports would become almost thrice from 2.3 percent to 8 percent by 2012, amounting to US$ 482 billion if the present annual growth rate of 37percent is maintained. India's services sector has grown considerably during the last few years and has been globally recognized for its high growth and development. This sector has been growing at an annual growth rate of about 37percent during the last 5 years.

Table-1 India's Service Sector Growth Perspective (1992-2015*)

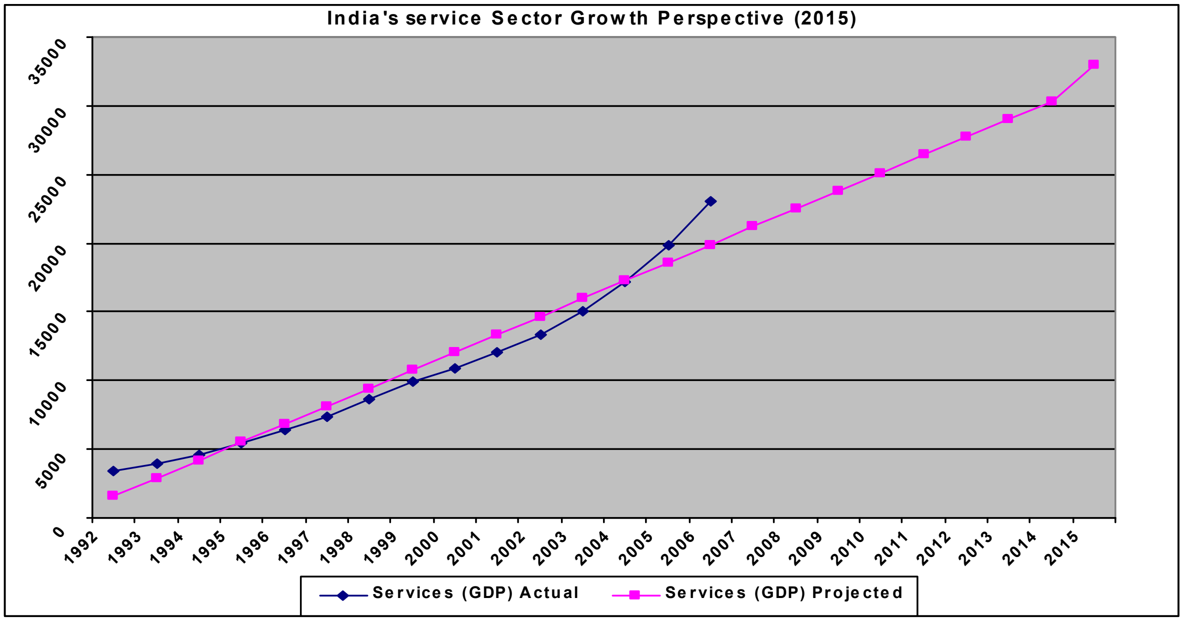
Years	GDP(Services) at Constant Price *Rs. (Billion)*	Growth (percent)	Index
1992	3413	10.0	100.0
1993	3973	16.4	116.4
1994	4584	15.4	134.3
1995	5478	19.5	160.5
1996	6354	16.0	186.2
1997	7354	15.7	215.5
1998	8631	17.4	252.9
1999	9897	14.7	290.0
2000	10835	9.5	317.5
2001	12024	11.0	352.3
2002	13293	10.6	389.5
2003	15066	13.3	441.4
2004	17206	14.2	504.1
2005	19796	15.1	580.0
2006	23025	16.3	674.6
Mean	**10728.6**	**14.33**	
SD	**5991.37**	**2.92**	
CV percent	**55.84**	**20.38**	
CAGR	**14.16**		
Proj-2015	**32952**		**965.5**

Source: Compiled from Economic Surveys and Handbook of Statistics RBI various issues (1992-2007).

India's service exports were meager US$ 1.7 billion in 1991-92 but over the year's services exports have grown significantly. There has been rapid growth in the services exports from the year 2002. The exports have grown up from US $ 19.1 billion in 2002 to US $ 73 billion in 2006(Jim Gordon and Poonam Gupta 2003), almost three times increase during the period under reference.

Table 2 presents relevant statistics with regard to India's services export import comparison. It has been found that the balance of payment from the services was not favourable in the beginning of reform period but with the passage of time owing to development of new technology and emergence of new source of finance service sector has now become first sector in GDP which has favourable balance among three sectors vis-à-vis agriculture, industry, and service.

Figure-1



Source: Projection from Table-1

From the data of last year of the study it is found out that import and export both are interrelated and has positive correlation but the coefficient of determination is in favour of export which shows that 100percent growth in services sector export impacts only 17percent growth in import. This suggests that the government of India should come forward to implement further reforms emphasizing on services sector having huge potential for future to take India to overall favourable BOP situation.

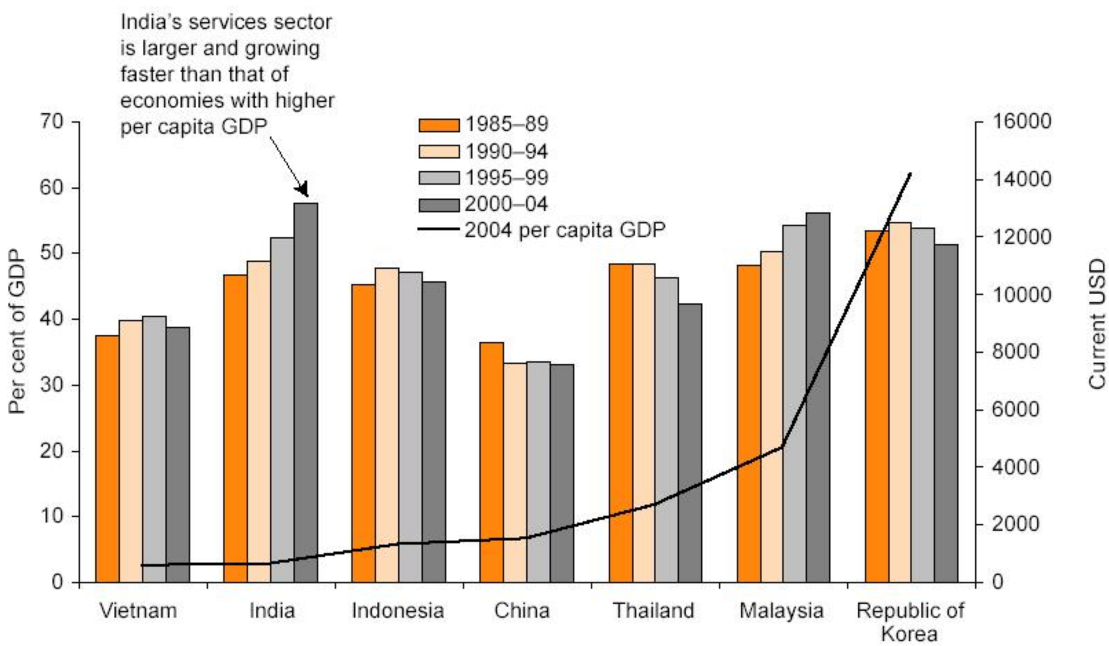
Table-2 India's Global Trade of Commercial Services

Years	Services Exports *US $ (Billion)*	*Growth (%)*	Services Imports *US $ (Billion)*	*Growth(%)*
1992	1.70		6.00	
1993	2.50	47.06	6.90	15.00
1994	5.30	112.00	7.50	8.70
1995	7.20	35.85	8.10	8.00
1996	8.00	11.11	9.00	11.11
1997	8.90	11.25	12.30	36.67
1998	11.00	23.60	14.20	15.45
1999	14.00	27.27	17.00	19.72
2000	16.00	14.29	18.90	11.18
2001	16.80	5.00	19.80	4.76
2002	19.10	13.69	20.80	5.05
2003	23.10	20.94	25.50	22.60
2004	38.50	66.67	38.40	50.59
2005	68.00	76.62	67.00	74.48
2006	73.00	7.35	70.00	4.48
Mean	**20.87**	**33.05**	**22.76**	**20.85**
SD	**22.18**	**30.43**	**20.45**	**19.59**
CV percent	**106.25**	**92.09**	**89.84**	**93.96**
CAGR	**26.12**		**18.42**	
		γ = **0.42**		γ^2 = **0.17**

Source: Compiled by the Authors form Economic Survey 2006-07 and RBI Handbook of Statistics of Indian Economy (2002-06).

Figure-2 evidently indicates that the contribution of services sector to the GDP of the selected Asian economies is in a favorable situation where Malaysia comes second to India but all others including China are in a route of declining in service sector even after the GDP per capita is more than that of India (Australian Government, 2007)

Figure-2: Contribution of Services Sector to the GDP of the Selected Asian Economies



Compiled By the Authors form Planning Commission Annual Reports and Report of Australian Government on India's Services Sector (2007)

Role of Venture Capital/Private Equity in the Economy

Venture capital refers to investment funds or partnerships that concentrate on investing in promising start-up and emerging companies. Venture capital is the finance provided by professionals or Venture capital firms who invest alongside management in companies that seem to have the potential to develop into significant economic contributors. A venture capital firm is generally a private partnership or closely held corporation funded by private and public pension and mutual funds, insurance funds, wealthy individuals, endowment funds, foundations, corporations, foreign investors. These firms' funds to start-up ventures, often well before anyone else, would be willing to invest. In exchange for these funds, the firms often take an active role in running, or at least overseeing, the venture. Venture capitalists generally offer financial support to new and rapidly growing companies, purchase equity securities, offer assistance in development of new products or services, add value to the company through their active participation, have a long-term orientations and plans, and take higher risks with the expectation of higher rewards. Some of today's most famous corporates such as Apple, Genentech, Intel, Compaq and Indian telecom giants Airtel are established through Venture capitalists (VCs). The venture capitalist gets an ownership interest for the money invested in its shares and securities (Sthyanarayana Chary, 2005)

The concept of venture capital fund was born with a fundamental objective to provide initial capital and support in building capital base to the entrepreneurs, having a sound background of professional education, expertise and initiative to launch the business based on fast changing technology. Venture capital financing supplements other personal or external funds that an Entrepreneur is able to tap, or takes the place of loans of other funds that conventional financial institutions are unable or unwilling to risk. The studies however conducted by the experts on the various issues on venture capital have not mentioned the importance of innovative source of finance which is integral part of services led growth of Indian economy.

Services Led Growth and Venture Capital/Private Equity

The service sector led growth of Indian economy is picking up the tab by new sources of innovative financing and investments which have mainly emerged as an output of liberalization. The emergence of venture capital in the post LPG era has widened the scope of new and innovative source of finance. The venture capital has had its positive impact on service sector of Indian economy as well. The fast changing modus operandi of global service sector has now recognized the significance of venture capital and private equity as the most vibrant industry in the financial market today. In the rapidly changing Indian economy, venture capital is a critical source of finance to commercialize the innovation and new ideas especially in the realm of intellectual capitalization. The global private equity boom since 2001 has also had its vital and strategic role in diversified financing pattern of venture capital. The statistics pertaining to Indian venture capital for the last 15 years reveal that the services sector have an average mind-boggling percentage share of 67percent with an average annual growth of 66percent justifying the larger chunk of share of services in GDP and its multiplier effect in total growth rate.

Venture Capital Investment in India since Liberalization

The venture capital investment in India has come in full circle only after liberalization of the economy in 1991. The concept of venture capital in India originated in early 1970s which institutionalized only in 1988 with the World Bank Report of 1988. The Venture Capital in India was structured after the establishment of SEBI and IVCA in 1992 and 1993 respectively. After the guidelines of 1996 and 2000 the role of risk capital has become functionalized in various establishments where the risk factor is even more than 10x. India's venture capital investment was concentrated only in production and manufacturing activities in early years of liberalization but the emergence of IT and modern services made the transformation process of VC/PE to innovative services sector which has now creative role in services led growth of Indian economy. The statistics regarding total venture capital investment and its sectoral pattern have been discussed in Table-3.

The data set out in the table gives a clear-cut idea of Indian venture capital since liberalization. The data show the investment *in toto* with its growth rate, total index, value of total investment in million US$. It is seen from the table that there is a continuous increase in venture capital investment up to 2000 but immediately in 2001 due to the 9/11 and stock market down fall of US markets negatively affected Indian venture capital industry (K. B. Subhash, 2006),. The index number (as on 1991-92 as base year) reached up to 7242 point in 2006 and the total trend shows peak with two breakups. . On the other hand, the total number of deals shows a decreasing trend except few years in the beginning. Even after the historical hike in the venture capital market decreasing trend is witnessed this pronounces that the venture capital is going towards big deals.

The year 2006 was the year of immediate hike in Indian venture capital industry touching the landmark of US$7500m with a growth rate of whopping 241percent. In total, the average investment per year stands at US$1083 million and the average annual growth rate is 62.49percent although continuous negative trends affected growth in the second decade of post LPG regime. A zigzag movement is also discernible in year wise growth rate which is not consistent. The index number of the total investment has also not come below 100 except in 1997.

Table 3 Venture Capital Investment in India in Post Liberalization Regime

Years	Total Venture Capital Investment In Million US $	Index	Growth (%)
1992	103.55	100.00	0.00
1993	134.46	129.85	29.85
1994	182.32	176.07	35.59
1995	201.15	194.25	10.33
1996	281.70	272.04	40.04
1997	80.00	77.26	-71.60
1998	250.00	241.43	212.50
1999	500.00	482.86	100.00
2000	1160.00	1120.23	132.00
2001	937.00	904.88	-19.22
2002	591.00	570.74	-36.93
2003	470.00	453.89	-20.47
2004	1650.00	1593.43	251.06
2005	2200.00	2124.58	33.33
2006	7500.00	7242.88	240.91
	1082.745		62.49

Source: Compiled By Authors from Venture Capital Year Book, IVCA, Venture Activity Reports of IVCA And Tsj Media Venture Intelligence Reports Various Issues 1992-2006

Sectoral Investment of Venture Capital in India

The total venture capital investment in India has been classified into various industrial sectors which lie in both services related and manufacturing related sectors. Table 3 gives an account with regard to the total sectoral investment pattern of VC/PE since liberalization. From Table-4 it is discernible that the venture capital is directly moving towards the services related industries such as media, entertainment, telecommunications, constructions, engineering, financial, health care, and other services that have a major share in concreting the share of venture capital in emerging service sector. For the sake of analysis the total sectoral investments are again classified in combined form of manufacturing or production, and services sector. It is clearly observed that the combined sectoral analysis of venture capital investments since 1991 has an average percentage share of 67percent with an average annual growth of 66percent, whereas the manufacturing or production sector is being neglected by the venture capital investors as a result of emergence of new and innovative services. The average VC/PE investment in services stood at US$ 812 million whereas the manufacturing has only US$270m which has been presented in Figure-3

The figure is presenting very apparent view about the zigzag growth of both services and production sector since beginning, but in fact the line of percentage share intersects in the beginning and after 1995, the share of services has increased suddenly, which justifies the sudden service sector led growth of GDP since mid 1990s.

Table-4 Sectoral VC/PE Investment since Liberalization

Industrial Sectors	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
IT& ITES	9	14	19	22	57	19	59	148	343	126	303	29	331	412	1470
Manufacturing	28	45	52	58	73	20	67	82	35	120	38	11	264	371	962
Financial Services	5	5	9	8	10	0	1	16	36	22	40	261	237	306	956
Health Care & Allied	9	10	13	13	18	5	14	10	23	46	22	65	165	269	515
ENGG/Electronics& Construction	9	9	10	10	12	0	0	2	4	1	1	1	85	92	599
Textiles &Garments	5	5	9	8	10	0	0	1	2	0	0	2	131	147	220
Agri & Food	12	15	23	25	25	5	14	5	12	1	3	1	49	61	143
Transportation & Logistics	5	5	9	8	9	0	2	40	93	0	1	1	21	28	210
Media& Entertainment /com	4	5	6	6	11	4	15	75	268	589	34	26	76	102	295
Energy	3	3	4	6	7	5	16	9	21	13	61	0	50	30	377
Retail/consumer	10	14	18	27	40	8	28	13	30	9	39	64	75	78	125
Others	5	5	9	8	10	14	34	100	292	9	50	8	166	301	1625
Total Investment in Million US$	104	134	182	201	282	80	250	500	1160	937	591	470	1650	2197	7497

Source: IVCA, and TSJ Media 1992-2006

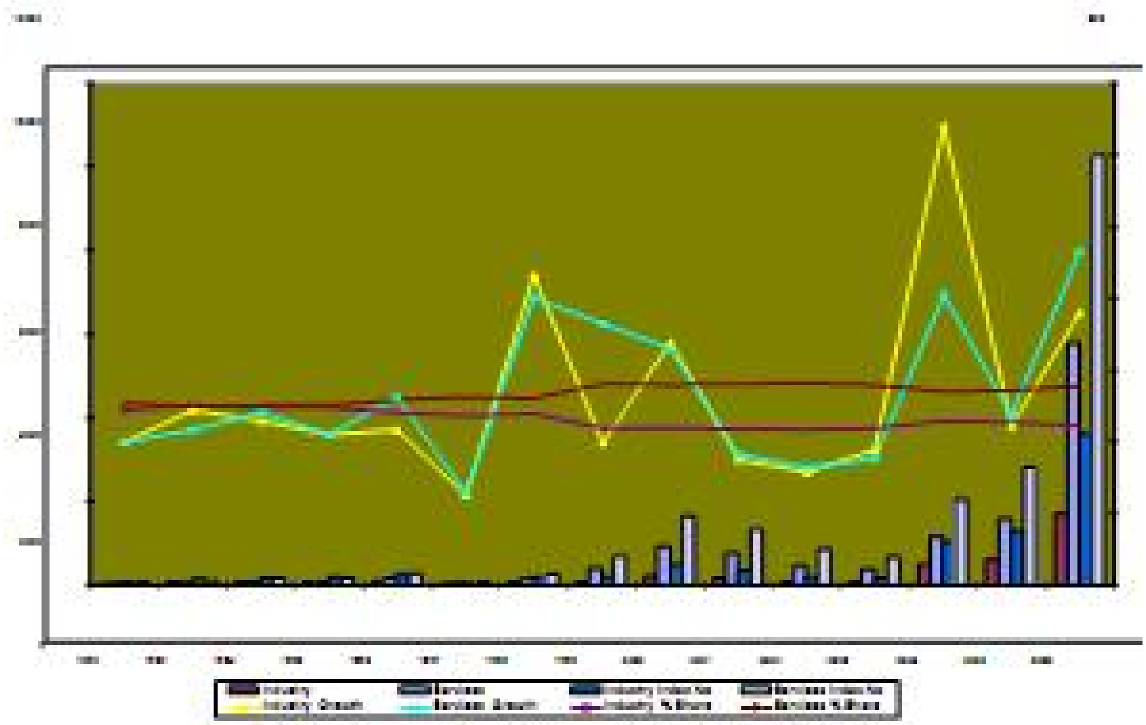
Table-5 Venture Capital Investment, Growth, and Share in Services and Manufacturing Sectors

Year		Industry	Services	Industry Growth (%)	Services Growth (%)	Industry percent Share	Services percent Share	Total VC/PE	VC/PE Growth (%)
1992	103.55	47	56	0	0	46	54	104	0
1993	134.46	68	66	44	18	51	49	134	30
1994	182.32	89	94	30	41	49	51	182	36
1995	201.15	98	103	10	10	49	51	201	10
1996	281.70	115	167	17	62	41	59	282	40
1997	80.00	30	51	-74	-70	37	63	80	-72
1998	250.00	98	152	232	201	39	61	250	213
1999	500.00	97	403	-1	165	19	81	500	100
2000	1160.00	232	928	140	130	20	80	1160	132
2001	937.00	175	762	-25	-18	19	81	937	-19
2002	591.00	102	489	-42	-36	17	83	591	-37
2003	470.00	91	378	-10	-23	19	81	470	-21
2004	1650.00	494	1156	440	206	30	70	1650	251
2005	2200.00	609	1588	23	37	28	72	2197	33
2006	7500.00	1702	5795	179	265	23	77	7497	241
Mean &AAGR	1082.74	**269.7**	**812.6**	**64.3**	**65.9**	**32.4**	**67.6**	**1082.3**	**62.5**

Source: IVCA, and TSJ media Reports 1992-2006

Table-6 is based on the classification of the total services again into IT and Non IT. Table is very clear about shift of the total VC investment to services sector from manufacturing sector. Regime of IT and ITES is also going to be matured and the new emerging services are replacing IT and now non IT services are dominating total VC/PE investment.

Figure-3 Venture Capital Investment, Growth, and Share in Services and Manufacturing Sectors



Source: Table 5

Table-6 Classification of Venture Capital Investment (Services) in IT & Non IT Services

Year	IT& ITES	Growth (%)	percent Share	Services	Growth (%)	percent Share
1992	13.58	0.00	24.11	42.75	0.00	75.89
1993	18.55	36.60	28.01	47.67	11.51	71.99
1994	24.62	32.72	26.33	68.90	44.54	73.67
1995	28.44	15.52	27.58	74.66	8.36	72.42
1996	68.20	139.80	40.86	98.71	32.21	59.14
1997	22.97	-66.32	45.49	27.53	-72.11	54.51
1998	73.50	219.98	48.34	78.55	185.33	51.66
1999	222.95	203.33	55.29	180.30	129.54	44.71
2000	611.44	174.25	56.09	478.62	165.46	43.91
2001	715.14	16.96	89.11	87.41	-81.74	10.89
2002	336.13	-53.00	68.71	153.05	75.09	31.29
2003	55.55	-83.47	12.18	400.39	161.61	87.82
2004	407.00	632.67	35.21	749.00	87.07	64.79
2005	514.00	26.29	32.37	1074.00	43.39	67.63
2006	1765.00	243.39	30.46	4030.00	275.23	69.54
Mean & AAGR	**325.13**	**102.58**	**39.11**	**506.10**	**71.03**	**60.89**
CAGR	**35.22**			**30.53**		

Source: Compiled from the IVCA and TSJ Media Reports (Various Issues from 1992-2006)

Testing of Hypothesis: Analysis and Interpretations

Hypothesis of the Study:

a) The null hypothesis (Ho_1) assumes that there is no significant relationship between the total country's GDP and the total investment in venture capital/private equity investment since liberalization

The total yearly venture capital investment is assumed to be Y and GDP growth rate is X. The correlation between the both is taken into equation 1and ***t***-statistic is calculated from the correlation of GDP growth and total VC/PE investments using the equation-2 as mentioned in the methodology.

Table-7 Analysis of Relationship of Venture Capital to Total GDP Growth

Years	Total VC/PE Investments	Total GDP Growth (%) Rate
1992	103.55	5.1
1993	134.46	5.9
1994	182.32	7.3
1995	201.15	7.3
1996	281.7	7.8
1997	80	4.8
1998	250	6.5
1999	500	6.1
2000	1160	4.4
2001	937	5.8
2002	591	3.8
2003	470	8.5
2004	1650	7.5
2005	2200	9
2006	7500	9.4
Mean	**1082.745**	**6.613**
Maxima	**7500**	**9.4**
Minima	**80**	**4.8**
SD	**1880.8**	**1.7**
CV (percent)	**25.1**	**18.0**
CAGR	**28.3**	**1.9**
'γ'	**0.53**	
'γ^2'	**0.28**	
't'	**2.23**	

Source: Author's Analysis from Tables.

From table-6 the ***t*** statistic has been worked out which amounts to 2.23. It is found to be greater than table value @ 5percent level of significance and 1percent level of significance, i.e. 1.771 and 1.350 respectively therefore the null hypothesis is rejected. This implies that the relationship between total venture capital investments and GDP growth rates is positively correlated and significantly in favour.

The statistics on relationship of investment of total venture capital since 1991 and total GDP for the said period it has been proved that the venture capital investment in India is playing a considerable role in promoting the growth rate of GDP. The coefficient of determination of both the parameters is very clear that there is dependence between venture capital and GDP.

The Hypothesis of the Study b) The null hypothesis (Ho_1) assumes that there is no significant interdependence between the Gross Domestic (Services only) Product, Net Venture

Capital Investment in service sectors and Gross Export of India's Services since liberalization.

The multiple correlations of the GDP (services), India's services exports and services led VC investments for the period under reference are to be estimated. Thus the simple correlation is to be tested three times assuming one variable as dependent and other two as independent. Multiple correlations (R) and Coefficient of determination are to be found using the third equation in each case along with ***t***-statistic of each variable by applying equation-2

By applying the formula of multiple correlation it is found out that in all the three variables, correlation is more than 0.86 and ***t***-statistic is more than @5percent level of significance and 1percent level of significance i.e. 1.771 and 1.350 respectively. The null hypothesis is therefore rejected. The relationship between the three parameters has been proved and thus the three variables are interdependent with one another. By applying the correlation equation it is found out that in all the cases positive correlation still exists and the coefficient of determination points out that there is interdependence between venture capital in services and even more than 50percent impact is identified on GDP in services.

Table-7 Analysis of interdependence of Services in Venture Capital, Total Services in GDP and, India' Services Exports

Year	Services Export in b US$	GDP(Services) in Rs Million	Services VC US$ million
1992	1.7	3413	56
1993	2.5	3973	66
1994	5.3	4584	94
1995	7.2	5478	103
1996	8	6354	167
1997	8.9	7354	51
1998	11	8631	152
1999	14	9897	403
2000	16	10835	928
2001	16.8	12024	762
2002	19.1	13293	489
2003	23.1	15066	378
2004	38.5	17206	1156
2005	68	19796	1588
2006	73	23025	5795
Mean	**20.87**	**10728.6**	**812.6**
Standard Dev	**22.18**	**5991.37**	**1454.15**
CV percent	**106.25**	**26.02**	**25.09**
CAGR	**26.12**	**14.16**	**32.95**
Coef of Correl: $\gamma 12$	**0.93**	**Mul.Cor: R1.23**	**0.95**
$\gamma 23$	**0.77**	**Mul.Cor: R2.13**	**0.93**
$\gamma 13$	**0.84**	**Mul.Cor: R3.21**	**0.84**
t- statistic	**10.78**	**9.05**	**5.29**

Source: Author's analysis From Tables.

The statistics with regard to relationship of services led growth of Venture capital in India with services led growth of GDP has been proved. It is found that the services sector has a dominant role in promoting venture capital investment in India which is directly correlated and resulted in the growth of services in GDP. The services sector led growth of GDP has an annual compound growth of 14.16percent whereas the same amounts to 26% in service exports. And 33% growth in services led venture capital indicates higher growth of venture capital investment. It ascribed to the higher growth services and its exports. The coefficient of determination of all the parameters is very clear that the dependence of one factor on other two in all the cases is more than 50percent, where the percentage of variations (CV percent) is also uniform.

The venture capital investment in India has undoubtedly a vital role in the services led growth of Indian economy since liberalization. It is also clear enough that the new and emerging service sector needs support from the innovative investors and that too is provided by venture capital / private equity investors. From forgoing analysis it can be concluded that it is high time that the Government should take initiation to promote the service oriented venture capital institutions other than manufacturing to maintain and sustain the status of India's global competitiveness for future in the realm of services.

CONCLUSIONS AND SUGGESTIONS

The accelerated growth rate in case of Indian economy is dependent upon service sector which is the most important part in GDP in India. This has been led by dynamism of its services sector and export of services through well-trained and exuberant manpower. The Indian Services sector is one of the most significant sectors of the Indian economy which contributed nearly 60 percent of the GDP in 2006-07. The sector has started playing an increasingly dominant role in the economy accounting for 68.6 percent of the overall average growth in GDP in the last years i.e. 2005-06 and 2006-07. While the Indian economy grew at the rate of 9.4 percent in 2006-07 against 9 per cent in 2005-06 whereas services grew at an impressive rate of 11percent in 2006-07 against 9.8 per cent in 2005-06. The present scenario of services sector led growth of Indian economy has greater influence on venture capital and private equity investments. The emergence of venture capital in the post LPG era has in fact widened the scope of new and innovative source of finance. The fast changing modus operandi of global service sector has now recognized the significance of venture capital and private equity as the most vibrant industry in the financial market today. The venture capital has had its positive impact on service sector of Indian economy as well. The service sector led growth of Indian economy is picking up the tab by new sources of innovative financing and investments which has mainly emerged only after liberalization.

The service sector within venture capital especially IT and IT enabled services has been important for country's services led growth after liberalization. But now many other services are growing such as KPO and it is also supposed that retailing industry will be cause of next boom for Indian economy; similarly telecom sector is also expected to grow rapidly in near future. So in all these new emerging services there will be need of venture capital and private equity which should be perforce promoted by the Government with further relaxation of rules and offerings of attractive incentives. The service sector is the only sector which can take India to achieve cherished target of becoming one of the developed nations of the world by 2020.

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