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Trends and Patterns of Private Investment in India

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TRENDS AND PATTERNS OF PRIVATE INVESTMENT IN INDIA

Jagannath Mallick*

Abstract

This study aims at providing an understanding of the economic structure and structural changes in private investment in the Indian economy. The overarching problem addressed in this study is whether or not identifiable structural transformation has occurred due to economic reforms in India. What were the trends in private investment in India?

Structural transformation is confined to the shifting or movement of resources from one sector to another within the private economy. This study utilised descriptive statistics like annual average growth rate, share and Z test statistics to find out the sectoral and sub-sectoral contributions to the growth of private investment in India as well as to verify the structural changes. The research questions addressed were: What were the short term and long term trends in private investment at the aggregate, sectoral and sub-sectoral levels? What was the contribution of the sectors and their sub-sectors to the growth of private investment in India before and after the reforms? Did an identifiable structural transformation occur in the Indian economy?

The National Accounts Statistics (NAS) was used for the data on private investment for the analysis of this study. The analysis revealed that the rate of capital formation had increased in the private sector and decreased in the public sector after economic reforms. Further, the industrial sector had been ranked one in terms of its contribution to the growth of private investment followed by the service and agricultural sectors in India in the short term as well as long term. However, the growth of private investment in the service sector was considerably higher in the post reform period than the pre-reform period. Further, the annual average of growth of private investment in the service sector was almost equal to the industrial secto in the post-reform period. Therefore, the service sector played a very important role in attracting private investment during the economic reforms period. The service sector comprises, among others, consumer and producer services. Further, it was found that the contribution of producer services, which includes real estate, ownership of dwellings and business services, and others, contributed to the growth of private investment in the service sector in India. In this context it is very important to study whether or not identifiable structural transformations in terms of private investment occurred in India.

JEL Classification: E22, L16

Key words: Private investment, Structural transformation, Sectoral and Sub-sectoral

Introduction

In recent years there has been an increasing euphoria among academicians and policy makers over the fact that the 1990s had ushered in a high growth pattern for India compared to the previous decades. This became possible because India was a model to other countries in attracting private investment for long-term economic growth. Its sustainability also depended significantly on private investment at the aggregate and dis-aggregate levels. Not many studies have examined in detail the trends in the allocation of private investment at the dis-aggregate level in India. However, some sector-specific studies by Mishra and Chand (1995), Chand (2001), Purohit and Reddy (1999), and Hearth and Jain

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(2005) etc., have focused on the trends and patterns of private investment in the agricultural sector. The present study tries to fill this gap.

This is an attempt to study the performance of the private sector and the sub-sectors in terms of rate of capital formation during the period 1980-81 to 2005-06. More specifically, this is an analysis of the trend in the rate of capital formation, share of capital formation and the growth of capital formation in the different sectors and sub-sectors of the private economy. This study is particularly relevant in the context of the recent debate on whether or not there has been a turnaround in the growth of private investment across sectors and the sub-sectors.

This study is also concerned with the structural transformation of private investment. Structural transformation refers to the movement or shifting of private investment from one sector or sub-sector to others. Some studies (Sastry et al 2003; Chaudhury and Choudhury 1995; Dhawan and Saxena 1992; and Shetty 2003) have examined this structural transformation using performance indicators such as Gross Domestic Product, employment etc., at the sectoral and sub-sectoral levels. However, no study has examined the structural change in private investment in India.

This paper has been divided into three sections. Section 1 begins with a discussion of concepts, data and measurement of private investment and methods used in the study. Section 2 presents an analysis of the overall and sectoral growth rates, share in private investment and the changes over time besides analysing the nature and significance of the growth in the service sector. Section 3 deals with the sources of growth and Section 4 analyses the structural transformation across sectors and sub-sectors. The broad conclusions emerging thereof are described in Section 5.

1.1. Measurement of Investment

Investment is the creation of capital or the net addition to capital stock. It is usually measured by Gross Capital Formation (GCF). As per the definition of the Central Statistical Organisation (CSO), GCF has two components, that is, Gross Fixed Capital Formation (GFCF) and change in stocks. The GFCF represents the gross value of goods which is added to the fixed domestic capital stock during a year. For instance, the GFCF comprises buildings, other construction, machinery and equipment. Each of these is classified further under new outlays, renewals and replacements. In other words, GFCF consists of outlays of industries, addition of commodities to their stocks of fixed assets less their net sales of similar second-hand and scrapped goods. The change in stock is the difference between market values of the stocks at the beginning and end of the period. It represents the value of the physical change in raw materials, work in progress (other than the work in progress on buildings which are included in fixed capital formation) and finished products that are held by commercial enterprises and households (Government of India: 1989). However, the change in stocks or the inventory investment is more unpredictable by nature. Hence, most of the studies measure private investment in terms of GFCF (Khan and Reinhart 1990; Blejer and Khan 1984; Wai and Wong 1982).

1.2. Data and Methodology

The analyses have included gross domestic product (GDP) and GFCF at the sectoral and sub-sectoral levels. The trend in private investment is analysed by using rate of capital formation (GFCF/GDP), annual growth rate and share of capital formation. The National Accounts Statistics gives data on GDP and GFCF at the sectoral and sub-sectoral level of the economy and the public sector. Further, the Input-Output Transaction Table[1] that is published quin-quenial wise by the CSO and consistent with NAS, gives information on GFCF by sectors and sub-sectors. It does not give information on GFCF by public sector and private sector. Hence, it is not useful for this study. Therefore, the following data has been used from NAS for the analysis in this study.

- GFCF at constant prices (1999-00) by industry of use from 1967 to 2005.
- Public GFCF at constant prices (1999-00) from 1980 to 2005.
- Public GCF at constant prices (1999-00) by industry of use from 1967-68 to 1979-80
- Public and total GDP at the 1999-00 prices from the period 1967-2005

The trends in private investment in terms of rate of capital formation has been analysed using data on GFCF at constant prices 1999-2000 for the period 1980-81 to 2005-06. The second part of this study analyses the trends in terms of annual sectoral and sub-sectoral growth rate and share in private capital formation for the period 1967-68 to 2005-06 by dividing the time periods as 1967-68 to 1979-80, 1980-81 to 1992-93 and 1993-94 to 2005-06. Further, the same data is used to describe the structural transformation in allocation of investment within the private sector. The methodology for the data compilation for this study is detailed in Annex. A.

Trends in Rate of Capital Formation

There was an increase in the volume of private and public investment from 1980 to 2005. The annual average share of private investment was 46.07 per cent for the period 1980-92, and it increased to 68.92 per cent during the post reform period, i.e., for the period 1993 to 2005 (Table.1). In contrast, the average share of public investment was 53.07 per cent, which declined to 31.08 per cent during the economic reforms period. The performance of the private and public sectors can be assessed by the rate of capital formation. The analysis has shown that the rate of capital formation in the economy was 21.96 per cent during the pre-reforms period, and increased to 25.52 per cent during the reforms period. An interesting question arises as to which sector was responsible for the increase in rate of capital formation.

Table 1: Performances of Private and Public Sector

	Share in Capital Formation (in %)		Rate of Capital Formation (in %)			Weighted Rate of Capital Formation (in %)	
	Public	Private	Public	Private	Total	Public	Private
Average of 1980-92	53.07	46.93	49.73	13.55	21.96	26.73	6.49
Average of 1993-2005	31.08	68.92	33.43	23.20	25.52	10.55	16.23

Source: Author's calculation

[1] Input-Output Transaction Table 1998-99, CSO, Ministry of Statistics and Programme Implementation, Government of India, Ssardar Patel Bhavan, Sansad Marg, New Delhi

Table 1 shows that the rate of capital formation was 13.55 per cent in the private sector during 1980-92 and it rose to 23.2 per cent between 1993 and 2005. In contrast, the rate of capital formation in the public sector in 1980-92 was 49.73 per cent, and it declined to 33.43 per cent during the post reforms period. The rate of capital formation has been increasing in the private sector during the economic reforms period at the expense of the public sector. The weighted rate of capital formation [2] has been calculated in Table 1. It shows that weighted rate of capital formation in private sector was lower than that of the public sector during the pre-reforms period. It increased to 16.23 per cent and has since been higher than that of the public sector.

Table 2: Annual Average of Rate of Private Investment in sectors and sub-sectors (in %)

Industry of origin	1980-92	1993-2005	1980-2005
1. Agriculture, forestry & fishing	5.41	7.25	6.33
1.1. Agriculture.	5.52	6.65	6.085
1.2. Forestry & logging	0.34	0.51	0.425
1.3. Fishing	8.35	24.25	16.3
Industry	**29.8**	**48.55**	**39.175**
2. Mining & quarrying	-6.29	63.99	28.85
3. Manufacturing	38.3	60.62	49.46
4. Elect. gas & water supply	108.44	17.57	63.005
5. Construction	3.71	7.93	5.82
Service	**12.98**	**21.25**	**17.115**
6. Trade, hotels & restaurants	5.9	5.79	5.845
6.1. Trade	3.93	4.56	4.245
6.2. Hotels & restaurants	31.03	19.35	25.19
7.Transport , storage & comm.	26.7	36.15	31.425
7.1. Railways	0	0	0
7.2. Transport by other means	28.43	38.95	33.69
7.3. storage	7.46	16.29	11.875
7.4. Communication	0	18.76	9.38
8. Financing, ins., real estate	22.35	38.23	30.29
8.1. Banking & insurance	8.49	17.96	13.225
8.2. Real estate, ownership of dwellings	25.41	44.69	35.05
9. Community, social	6.32	17.48	11.9
9.1. Public admn. & defence	0	0	0
9.2. Other services	6.32	21.31	13.815
Total	**13.55**	**23.2**	**18.375**

Source: Author's calculation

The annual average rate of capital formation in the economy increased from 21.96 per cent in 1980-92 to 25.52 per cent in the post reforms period. In the post reforms period, the increasing rate of capital formation in the private sector stimulated the rate of capital formation in the economy as a

[2] Weighted rate of capital formation = share of investment * rate of capital formation

whole. Hence, the private sector was responsible for stimulating the rate of capital formation in the economy during the economic reforms period. It would be interesting to identify the sectors and sub-sectors responsible for stimulating the rate of capital formation in the private sector in India.

The analysis of the rate of capital formation across sectors and sub-sectors shows the dominance of industrial sector during the entire period (Table 2). The annual average rate of capital formation during the economic reforms period was 1.6 times that of the average rate of capital formation during the pre-economic reforms period. From 1980 to 1992, the average rate of capital formation in the agricultural sector was 5.41 per cent and 12.98 per cent in the service sector - lower than the national average of 13.55 per cent). During the period 1993-2005, the trend was similar, but all the three sectors witnessed an increase in the rate of capital formation. The average rate of capital formation was lower than the national average (23.2) in the agricultural (7.25 per cent) and service (21.25 per cent) sectors in 1993-2005. The long term trends show that the average rate of capital formation in industrial sector dominated over agricultural and service sectors during this period.

It may be interesting to list the factors responsible for stimulating the rate of capital formation within each sector. The annual average of rate of capital formation in the agriculture sector increased marginally during the economic reforms period. The agricultural sector comprises agriculture, forestry, logging and fishery. The annual average of rate of capital formation in fishery was higher than that of the other two sub-sectors in the agricultural sector.

Regarding the industrial sector in 1980-92, the average rate of capital formation in the power sector (108 per cent) was dominant followed by the manufacturing sector (38.03 per cent). The trend changed during 1993 to 2005. The rate of capital formation was 64 per cent, 60.62 per cent and 17.57 per cent for the manufacturing and electricity, water and gas sectors respectively. However, in the long term the manufacturing and electricity sectors were dominant. In 1980-92, hotels and restaurants were the highest (31 per cent), followed by transport by other means (28.43 per cent), real estate, ownership of dwellings and business services (25.41 per cent), storage (7.54 per cent), banking and insurance (8.49 per cent), storage (7.46 per cent), other services (6.32 per cent) and trade (3.93 per cent). The interesting result is that real estate, ownership of dwellings and business services was highest (44.69 per cent) followed by transport by other means (38.95 per cent), other services (21.31 per cent), hotels and restaurants (19.35 per cent), communication (18.76 per cent) and others. During the period 1980-2005, real estate, ownership of dwellings and business services was highest (35.05 per cent) followed by transport by other means (33.69 per cent), hotels and restaurants (25.19 per cent) and others.

Hitherto we analysed the behaviour of investment across sectors and sub-sectors in terms of rate of capital formation. The weighted rate of capital formation may give a clear picture of the contribution of the sectors and sub-sectors to the increased rate of capital formation during the economic reforms period.

The analysis (Table 3) shows that the contribution of the industrial sector to the rate of capital formation was highest in the short and long term. Between 1980 and 92 the contribution of the agricultural sector was 0.94 per cent, while it was 14.79 and 4.45 per cent for the industrial and service sectors, respectively. The same trend was observed during the economic reforms period. For instance, the contribution of agricultural sector declined to 0.71 per cent in 1993-2005, and that of the other two sectors increased to 25.54 and 8.65 per cent, respectively. In the long term, from 1980 to 2005, the annual average of contribution of the agricultural sector was 0.93 per cent, 19.97 per cent for the industrial sector and 6.55 per cent for the service sector. The increase in the rate of capital formation during the post reform period was made possible by the industrial and service sectors.

Table 3: Annual Average of Weighted Rate of Private Investment in Sectors and Sub-sectors (in %)

Industry of origin	1980-92	1993-2005	1980-2005
1. Agriculture, forestry & fishing	0.94	0.71	0.825
1.1 Agriculture.	0.91	0.55	0.73
1.2 Forestry & logging	0	0	0
1.3 Fishing	0.08	0.38	0.23
Industry	**14.79**	**25.14**	**19.965**
2. Mining & quarrying	-0.08	0.48	0.2
3. Manufacturing	17.56	28.3	22.93
4. Elect. gas & water supply	3.84	1.95	2.895
5. Construction	0.07	0.19	0.13
Service	**4.45**	**8.65**	**6.55**
6. Trade, hotels & restaurants	0.38	0.27	0.325
6.1 Trade	0.16	0.16	0.16
6.2 Hotels & restaurants	0.77	0.27	0.52
7.Transport , storage & comm.	2.32	3.63	2.975
7.1 Railways	0	0	0
7.2 Transport by other means	2.45	3.6	3.025
7.3 Storage	0.01	0.01	0.01
7.4 Communication	0	0.23	0.115
8. Financing, ins., real estate	3.67	8.21	5.94
8.1 Banking & insurance	0.14	0.71	0.425
8.2 Real estate, ownership of	3.86	8.87	6.365
9. Community, social	0.2	1.27	0.735
9.1 Public admn. & defence	0	0	0
9.2 Other services	0.2	1.27	0.735

Source: Author's calculation

However, within the broad sectors of agriculture, forestry & and fishery, the contribution of the agricultural sector was significant (0.91) The manufacturing sector was dominant within the industrial sector, with real estate, ownership of dwellings, business services and transport by other means as the major contributors within the service sector. In 1980-92, the major contributor to the rate of capital formation was the manufacturing sector (17.56%), followed by electricity and water supply and gas (3.84%). However, mining, quarrying and construction were ignored within the industrial sector. During 1993-2005, the contribution of manufacturing sector was 28.3 followed by electricity, gas and water supply (1.95%), mining and quarrying (0.48%) and construction (0.19%). The same trend was observed within the industrial sector in the long term also.

Within the service sector, real estate, ownerships of dwellings and business services, and transport by other means were major contributors. During 1980-92, the contribution of real estate, business services and ownership of dwellings was highest (3.86%) followed by transport by other means (2.45%). The contribution made by trade, hotels and restaurants, banking and insurance, storage, communication and other services was ignored during this period. In the period 1993-2005 the major contributors were the same two sub-sectors. During this period, real estate, ownership and business services was highest (8.87%) followed by transport by other means (3.6%), other services (1.23%), banking and insurance (0.71%) and others. Further, in the long term the two same two sub-sectors were the major contributors to the rate of capital formation in the private economy.

It can be surmised that the industrial and service sectors were responsible for the increased rate of capital formation during the economic reforms period in India. Particularly, the manufacturing sector within the industrial sector, real estate, ownership of dwellings and business services was the major source responsible for the rate of capital formation in India.

2.1. Overall and Sectoral Growth Rates in Private Investment

An analysis of the simple growth rates (annual average of percentage change in private investment) for the periods 1967-68 to1979-80, 1980-81 to 1992-93 and 1993-94 to 2005-06 and for the three main sectors, viz., agriculture, industry and services, in constant prices provides a profile on capital formation in the private sectors in the Indian economy (See, Table 4).

The analysis of the trend in private investment in India shows that in the first and second periods, the annual average growth rate of private investment was very low but increasing slowly. However, in the third period or the period of economic reforms there was a sharp increase in the growth rate of private investment in the economy. The growth increased from 4.17 per cent during first period to 6.75 per cent during the second period and rose to 11.97 per cent during the third period. On the whole, the growth rate was only 7.63 per cent. Sector-wise growth rates also present some interesting results. There was a marginal increase in the annual average growth rate from the first to second period and second to the third. Further, within the agricultural sector, agriculture showed fluctuating growth from 6.04 per cent to 5.77 per cent and 6.4 per cent for the three periods. The growth rate was low for the entire period at 6.07 per cent suggesting that the agricultural sector was not a promising sector for the economy.

The industrial sector's growth rate in the first phase was 3.57 per cent followed by 10.15 per cent in the second and 14.41 per cent during the third period. On an average, for the whole period, the sector's annual average growth rate of private investment was 9.38 per cent. Further, the growth rates of the tertiary sectors steadily increased from 6.77 per cent during the first period to 7.86 per cent in the second and to 12.15 per cent in the third. The annual average of growth rate was 78.93 per cent for the period as a whole. The interesting fact is that it was the industrial sector that had the highest annual average growth rate in private investment from 1967-68 to 2005-06 in the Indian economy.

Table.4. Annual Average Growth of Private Investment by Sectors and Sub-Sectors (in %)

Industry of origin	1967-79	1980-92	1993-2005	1967-2005
1. Agriculture, forestry & fishery	5.83	5.89	7.41	6.38
1.1. Agriculture.	6.04	5.77	6.40	6.07
1.2. Forestry & logging	6.82	6.51	7.45	6.93
1.3. Fishery	3.09	11.62	14.87	9.86
Industry	3.57	10.15	14.41	9.38
2. Mining & quarrying	13.18	27.22	82.80	41.07
3. Manufacturing	3.04	10.87	14.75	9.56
4. Elect., gas & water supply	14.57	20.08	12.53	15.73
5. Construction	3.16	11.22	24.46	12.95
Service	6.77	7.86	12.15	8.93
6. Trade, hotels & restaurants	17.07	4.24	14.17	11.83
6.1. Trade	21.57	2.49	17.83	13.96
6.2. Hotels & restaurants	6.65	39.06	8.39	18.04
7.Transport , storage & comm.	-28.31	17.49	18.87	2.68
7.1. Railways	0.00	0.00	0.00	0.00
7.2. Transport by other means	3.54	18.81	16.99	13.11
7.3. Storage	170.05	32.62	21.57	74.75
7.4. Communication	0.00	0.00	14.76	4.92
8. Financing, ins., real estate	4.12	9.18	11.10	8.14
8.1. Banking & insurance	11.04	30.91	9.68	17.21
8.2. Real estate, ownership of	4.17	8.36	12.51	8.35
9. Community, social	0.89	13.28	19.91	11.36
9.1. Public admn. & defence	0.00	0.00	0.00	0.00
9.2. Other services	0.89	13.28	19.91	11.36
Total	**4.17**	**6.75**	**11.97**	**7.63**

Source: Author's calculation

This was the historical profile of growth of GFCF. It must be observed that during the period of economic reforms all the three sectors experienced better growth rates in private investment. One important factor that needs to be examined in this context is whether the sectoral growth rates in private investment were uniformly spread across the sub-sectors. In other words, were the sub-sectors within each sector leading or lagging?

The analysis shows that the annual average growth rate in private investment in forestry and logging (6.82 per cent) was highest within the agricultural sector in the first period. It was 6.04 per cent in agriculture and 3.09 per cent in fishery, which was lowest among the sub-sectors in the agricultural sector during the first period. The annual average growth rate in the fishery sub-sector was highest at 11.62 per cent within followed by forestry and logging (6.51 per cent) and agriculture (5.77 per cent) in the second period. In the third period as well as in the long term, the same trend was experienced.

Within the industrial sector, the analysis shows that the annual average growth rate in private investment in mining and quarrying was highest over the whole period. In electricity sector, the growth rate was negative at 14.57 per cent, followed by mining and quarrying (13.18 per cent), construction

(3.16 per cent) and manufacturing (3.04 per cent) in the first period. In the second period, the annual average growth rate was highest in mining and quarrying (27.22 per cent) followed by electricity, water supply, gas and construction. A change in trend was observed in the third period. Mining and quarrying is continued to achieve higher annual average growth rates (82.8 per cent) followed by construction (24.46 per cent), manufacturing (14.75 per cent) and electricity, water supply and gas (12.15 per cent). The manufacturing and construction sub-sectors also experienced a rising trend in terms of annual average growth rate in private investment during these periods.

Regarding the tertiary sector, the annual average growth in private investment consistently increased from the first to the second and then to the third period. Within the services sector there was a disparity in the growth of private investment. For instance, storage showed good growth in all the periods. The annual average growth was 170 per cent, 32.62 per cent and 21.57 per cent in the first, second and third periods respectively. Real estate, ownership of dwellings and business services and other services also experienced growth continuously. The annual average growth in private investment was 0.89 per cent in the first period, 13.28 per cent in the second and 19.91 per cent in the third period in real estate, ownership of dwellings and business services, respectively.

A summary of the long-term trends in growth for the period revealed that the industrial sector had the highest average growth rate, followed by the service sector and then the agricultural sector with a low of 6.83 per cent.

2.2. Private Investment by Sectors and Sub-sectors

The relative share of three sectors during the period 1967-68 to2005-06 (Table 5) shows that the industrial sector was the major contributor (44.33 per cent) followed by the service sector with 37.41 per cent for the entire period. The annual average share of the agricultural, industrial and service sectors was 23.53 per cent, 32.72 per cent and 39.25 per cent respectively in the first period. The picture changed thereafter. In the second period, it was the industrial sector (49.52 per cent) that dominated followed by the service sector (33.33 per cent). In the 1980's the share of the agricultural sector declined to 17.15 per cent, and that of the service sector fell to 33.33 per cent.

That pattern gained strength in the third period when the share of the industrial sector increased to 50.74 per cent while that of the agricultural declined to 9.6 per cent. The share of the service sector rose to 39.66 per cent. It is to be noted that in all the three periods the share of industrial sector was constantly increasing. In contrast, the share of the agricultural sector was decreasing and also the lowest.

The sub-sectoral analysis has shown that for the period, within the industrial sector, it was the manufacturing sector that dominated over the whole period. The share of manufacturing in private capital formation was 29.06 per cent, 45.78 per cent and 45.56 per cent. Further, the annual average of share of electricity, water supply and gas and construction was low but increased over the period.

For the period as a whole within the tertiary sector, real estate, ownership of dwellings and business services dominated with 19.04 per cent while transport by other means contributed 7.24 per cent and trade 5.05 per cent. From the first period, the share of trade declined from 8.64 per cent, to

6.44 per cent and to 4.59 per cent, respectively, while other services increased its contribution from 2.45 per cent to 2.98 per cent and 5.05 per cent.

Table5: Annual Average of Sectoral and Sub-Sectoral Share of Private Investment (in %)

Industry of origin	1967-79	1980-92	1993-2005	1967-2005
1. Agriculture, forestry & fishing	23.53	17.15	9.60	16.76
1.1. Agriculture.	22.64	16.22	8.17	15.68
1.2. Forestry & logging	0.04	0.04	0.02	0.04
1.3. Fishery	0.85	0.88	1.41	1.04
Industry	**32.72**	**49.52**	**50.74**	**44.33**
2. Mining & quarrying	1.23	0.36	0.48	0.69
3. Manufacturing	29.06	45.78	45.56	40.13
4. Elect., gas & water supply	0.66	1.55	2.46	1.56
5. Construction	1.77	1.84	2.24	1.95
Service	**39.25**	**33.33**	**39.66**	**37.41**
6. Trade, hotels & restaurants	8.64	6.44	4.59	6.56
6.1. Trade	7.89	3.97	3.29	5.05
6.2. Hotels & restaurants	0.75	2.46	1.30	1.51
7.Transport , storage & comm.	3.86	8.08	9.34	7.09
7.1. Railways	0.00	0.00	0.00	0.03
7.2. Transport by other means	5.06	8.01	8.65	7.24
7.3. Storage	0.03	0.06	0.05	0.05
7.4. Communication	0.00	0.00	0.64	0.21
8. Financing, ins., real estate	24.28	15.84	20.69	20.27
8.1. Banking & insurance	0.34	1.09	2.26	1.23
8.2. Real estate, ownership of	23.94	14.75	18.42	19.04
9. Community, social	2.32	2.98	5.05	3.45
9.1. Public admn. & defence	0	0.00	0.00	0
9.2. Other services	2.46	2.98	5.05	3.50
Total	**100.00**	**100.00**	**100.00**	**100.00**

Source: Author's calculation

Over three decades, the industrial sector, which contributed about 44.33 per cent, continued to be a major contributor. The second period saw some shift in the composition of private investment across the sectors. The share of the agricultural sector declined, and there was a vast change in the share of industrial sector. Since the second period, there have been some signs of change and it strengthened in the third period but the major contributors to private investment continued to remain the same. This suggested that the changes were not strong enough to bring about a marked difference in the allocation of private investment across the sectors.

The implications of this growth pattern for the economy's medium and long-term growth would depend very much on the pattern of growth of the industrial and service sector. The private service sector can be classified as consumer services[3], producer services, government services and other services. The patterns of private investment in share of these services is analysed in Table.6.

Table 6: Annual Average Share in Private Investment within the Service sector (in %)

	1967-79	1980-92	1993-2005	1967-2005
A. Consumer services	22.23	19.57	11.87	17.89
a.1. Trade	20.31	12.07	8.47	13.62
a.2. Hotels & restaurants	1.92	7.49	3.39	4.27
B. Producer services	71.39	71.48	75.37	72.75
a. Transport , storage & comm.	7.84	24.04	23.33	18.40
a.1. Railways	0.0	0.00	0.00	0.08
a.2. Transport by other means	13.33	23.84	21.71	19.63
a.3. Storage	0.07	0.20	0.13	0.13
a.4. Communication	-0.04	0.00	1.49	0.48
b. Financing, ins., real estate	63.55	47.44	52.05	54.34
b.1. Banking & insurance	0.87	3.14	6.23	3.41
b.2. Real estate, ownership of	62.68	44.30	45.82	50.93
C. other services	6.38	8.96	12.76	9.37
Total	**100**	**100**	**100**	**100**

Source: Author's calculation

Producer services dominated the first period and constituted an annual average share of 71.39 per cent of private investment in whole service sector, followed by consumer services and other services. The share of producer services rose to 71.48 per cent in second and to 75.37 per cent in third period. In contrast, the share of consumer services came down from 22.23 per cent to 19.57 per cent in the second period and to 11.87 per cent in the third period. As for other services, its share increased from 6.38 per cent in the first period to 8.96 per cent in the second and 12.76.per cent in the third. For the whole period, producer services dominated over consumer and other services.

Producer services comprise of the sectors of transport by other means, storage and communications, banking and insurance, real estate and ownership of dwellings. In the first period real estate, ownership of dwellings and business services (562.68 per cent) and transport by other means (13.33 per cent) were the major contributors. The share of banking and insurance, communication and railways was low and negligible. This structure remained unchanged even during the second period but the share of real estate came down sharply to 44.3 per cent, transport by other means rose to 23.84 per cent, while banking and insurance increased to 3.14 per cent. Further, the share of real estate, ownership of dwellings and business services rose to 45.82 per cent, banking and insurance rose to 6.23 per cent, and transport by other means came down to 21.71 per cent. Thus, the increase in the share of the producer services in the private investment of the economy may be largely attributed to

[3] Trade, hotels and restaurant are included under consumer services. It would be useful to remember that trade forms part of producer's service. Since no separate data is available for this sector, it has to be put under consumer services. The results have to be interpreted bearing this in mind. In other words, it implies producer services are underestimated while consumer services are overestimated.

the increases in the shares of transport by other means and to a lesser extent banking and insurance in the second period.

2.3. Sources of Growth of Private Investment

So far the behavior of the allocation of investment across the sectors and sub-sectors in terms of either growth rates or share has been analysed. However, to get a clearer picture of the contribution of a sector to the economy's growth of private investment, it is important to consider the growth rate and its sectoral share together. The sectoral contribution to the growth of private investment has been estimated in Table 7.

Table 7: Annual Average of sectoral Contribution to Growth of Private Investment (in %)

Industry of origin	1967-79	1980-92	1993-2005	1967-2005
1. Agriculture, forestry & fishing	1.52	1.30	0.77	1.19
1.1. Agriculture.	1.52	1.21	0.55	1.10
1.2. Forestry & logging	0.00	0.00	0.00	0.00
1.3. Fishing	0.04	0.13	0.23	0.13
Industry	**1.27**	**5.12**	**7.89**	**4.76**
2. Mining & quarrying	0.82	0.43	1.19	0.81
3. Manufacturing	1.01	5.07	7.37	4.48
4. Elect. gas & water supply	0.43	0.57	0.39	0.47
5. Construction	0.07	0.28	0.68	0.34
Service	**3.18**	**2.99**	**5.01**	**3.73**
6. Trade, hotels & restaurants	1.60	0.27	0.87	0.92
6.1 Trade	1.86	0.11	0.81	0.92
6.2 Hotels & restaurants	0.10	1.15	0.15	0.47
7.Transport , storage & comm.	2.60	1.87	2.18	2.22
7.1 Railways	0.00	0.00	0.00	0.00
7.2 Transport by other means	2.22	1.99	1.89	1.37
7.3 Storage	0.12	0.04	0.02	0.06
7.4 Communication	0.00	0.00	0.22	0.07
8. Financing, ins., real estate	1.10	1.87	2.62	1.86
8.1 Banking & insurance	0.06	0.43	0.52	0.34
8.2 Real estate, ownership of	1.10	1.58	2.64	1.77
9. Community, social	0.05	0.44	1.19	0.56
9.1 Public admn. & defence	0.00	0.00	0.00	0.00
9.2 Other services	0.05	0.44	1.19	0.56
Total	**4.17**	**6.75**	**11.97**	**7.63**

Source: Author's calculation

It is interesting to note that, the industrial sector was the biggest contributor to the growth of private investment at an annual average of 4.76 per cent for the whole period followed by service sector with 3.73 per cent. The annual average of contribution to the growth of private investment was 3.18, 1.52 and 1.27 per cent for the service, agricultural and industrial sectors respectively, during the period 1967-79. This picture has changed since 1980 to 1992. In the period the contribution of the industrial sector was highest, i.e., 5.12 per cent followed by the service sector (2.99%) and agricultural sector (1.3%). Further, in the period 1993-2005, the annual average of contribution was 7.89, 5.01 and 0.77 per cent for the industrial, service and agricultural sector respectively. Thus, the rise in the contribution of industrial sector was at the expense of the agricultural sector in the third period.

Further, some interesting patterns were observed in the sub-sectors also. Agriculture was the only sub-sector to contribute to the growth of private investment in the agricultural sector. The main contributors were mining and quarrying and manufacturing in the industrial sector in the long term as well as short term. In the first period, the major contributors of the service sectors were transport by other means (2.22%), trade (1.86%), real estate, ownership of dwellings and business services (1.1%) and others. However, transport by other means continued to be the highest contributor (1.99%) followed by real estate, ownership of dwellings and business services (1.58%), hotels and restaurants (1.15%) and others in the second period. Further, the real estate, ownership of dwellings and business services became the top contributor (2.64%) followed by transport by other means (1.89%) and other services (1.19%) and others. In the long term, real estate, ownership of dwellings and business services were the top contributors (1.77%) followed by transport by other means (1.37%) and others.

In the tertiary sector by type of services (Table 8) producer services contributed most to the growth of private investment during the period 1967-2005. In the first period, the contribution of producer services was (5.15%), followed by consumer services (3.96%) and other services (0.12%). In the second period, a change took place, i.e., the contribution of consumer services in the growth of private investment in the service sector declined to 0.71%, producer services increased to 6.73 % and that of other services to 1.26%. In the third period, the same trend was noticed in the contribution to the growth of private investment in the service sector.

Table 8: Annual Average Contribution within the service sector in Growth of Private Investment (in %)

	1967-79	1980-92	1993-2005	1967-2005
A. Consumer services	**3.96**	**0.71**	**2.01**	**2.23**
a.1. Trade	4.56	0.29	1.88	2.24
a.2. Hotels & restaurants	0.24	3.05	0.33	1.21
B. Producer services	**5.15**	**6.73**	**9.47**	**7.11**
a. Transport , storage & comm.	11.38	5.20	5.10	7.23
a.1. railways	0.00	0.00	0.00	0.00
a.2. Transport by other means	0.59	5.53	4.39	3.51
a.3. Storage	0.29	0.12	0.04	0.15
a.4. Communication	0.00	0.00	0.57	0.19
b. Financing, ins., real estate	3.12	4.95	6.27	4.78
b.1 Banking & insurance	0.15	1.21	1.21	0.86
b.2. Real estate, ownership of	3.12	4.13	6.44	4.56
C. Other services	**0.12**	**1.26**	**3.12**	**1.50**

Source: Author's calculation

Producer services contributed the highest to the growth of private investment in the service sector followed by consumer and other services. Over the whole period, the annual average contribution of producer services was 7.11%, and 2.23% and 1.5% for consumer services and other services, respectively. Within producer services, the main contributors in the first period were real estate, ownership of dwellings (4.56%) and transport by other means (3.51%) over the whole period. Within the service sector, producer services, more specifically real estate, ownership of dwellings and business services, and transport by other means provided the stimulus for the growth of private investment in India.

To summarize, the industrial and service sectors contributed to the growth in private investment in the recent Nineties and hence, growth of GDP. Within the industrial sector, manufacturing sectors contributed the highest to the growth of private investment, followed by the real, estate, ownership of dwellings and transport by other means in the services sector.

Structural Transformation

Structural transformation was confined to the shifting or movement of resources from one sector to another. As the focus of this study is on private investment, structural transformation in this context deals with the movement or shifting of private investment from one sector to another in the economy. However, several scholars like Dhar (1965), Sastry et al (2003), and Dhawan and Saxena (1992) used the input-output approach to study the Indian economic structure and structural changes. In fact, the Input-Output Transaction Table in India gives information for the quin-quenial basis but does not give information on investment by private or public sector. Therefore, this study has used the information from NAS instead of Input-Output Transaction Table in India.

The period of study was divided as I (1967-1979), II (1980-93) and III (1993-2005) in order to study the structural transformation in private investment in India for the period 1967-2005. The measurement of structural transformation of an indicator uses the following steps:

1. Calculate the annual average of the indicator in all the sectors for the three periods.
2. Find the ranks of the annual average of the indicators for the three periods.
3. Find the rank correlations for the sectors in 1st period with the second period, and the rank correlation of the sectors in 1st period with the 3rd period.
4. To test whether the rank correlations are statistically different, the Z test can be used.
5. The statistical significance of the difference between the two ranks indicates whether or not there was structural transformation.

We used two indicators to test for structural transformation in the allocation of private investment in the economy, i.e, the sectoral share in private investment and sector wise contribution to the growth of private investment. In order to measure structural transformation in terms of these two indicators, the steps mentioned earlier were utilised. However, ranks of sub-sectors were in terms of the two indicators presented in Annex 1 and Annex 2 respectively. We estimated the rank correlation coefficients for a) sectoral shares, b) sectoral contributions to growth of private investment for periods I and II (i.e.1967-68 to 1979-80 and 1980-81 to 1992-93) and periods I and III (1967-68 to 1979-80 and 1993-94 to 2005-06). Our results showed that rank correlation coefficients in the case of sectoral shares declined from 0.92 to 0.86% (Table.9.). These results were further subjected to the Z test and the differences in the correlation were found to be statistically significant at 1 per cent. This suggests that there was structural transformation in the allocation of private investment for the period 1967-68 to 2005-06.

Table 9: Spearman's Rank Correlation Coefficients

	1967-79 to 1980-92	1967-79 to 1993-2005
Share of Sub-sectors	0.92	0.86
Contribution of different sub-sectors to private investment growth	0.27	0.55

Source: Author's calculation

The same analysis was used in order to assess the structural transformation in private investment by using the indicator of sectoral contribution to the growth of private investment in the economy. The ranking of the sub-sectors in terms of their annual average contribution to growth of private investment for the period 1967-79, 1980-92 and 1993-2005 has been presented in Table 7. Spearman's correlation coefficients for the first period with third, and second with third were 0.27 and 0.55%, respectively (Table.9). Further, the Z test showed that, the difference between the two rank correlation coefficients was statistically significant at 1 per cent. It shows that, there was structural transformation in terms of the sub-sectors' contributions to the aggregate growth of private investment in India for the period 1967-2005.

Conclusions

This paper has described the trends and patterns of private investment at the aggregate, sectoral and sub-sectoral levels in India for the period 1967-68 to 2005-06. This analysis has revealed the following.

It was found that, the share of private investment had increased during the economic reforms period while that of public investment had declined. Further, the rate of capital formation in the public sector was higher than in the private sector in the pre-reforms periods, but during economic reforms period it was reversed. However, there was a disparity across the sectors and sub-sectors in terms of private investment. The industrial sector dominated over the service and agricultural sectors in terms of rate of capital formation in the short and long term. There was a big change in the rate of capital formation with the introduction of economic reforms (mid 1980s) in India. Further, within the industrial sectors, the sub-sectors, such as electricity, gas and water supply, and manufacturing, were the dominating sectors during economic reform period. The analysis shows that, the annual average growth of private investment in electricity, gas and water supply was very higher that that of manufacturing sector.

Within the service sector, transport by other means and real estate, ownership of dwelling and business services dominated in terms of rate of capital formation. Specifically, economic reforms lead to the sudden growth of capital formation in real estate, ownership of dwellings and business services in

India. The weighted rate of capital formation indicated that real estate, ownership of dwellings were the most important sub-sectors, followed by transport by other means, in the rate of capital formation within the service sector. However, this suggests that manufacturing and real estate, ownership of dwellings and business services were the major contributors to the increase in the rate of capital formation in the private sector as a whole during the economic reforms period.

The analysis has shown that there was a declining trend in the share of the agriculture sector in the growth of private investment. The industrial sector showed a positive trend in the share of private investment during the study period. The growth in the share of private investment was significant in the 1980's or the second period. It could have been due to the introduction of economic reforms in the 1980's. Further, the same trend was maintained during the 1990's with the association of the broad measures of economic reforms. The important observation was that the industrial sector had developed at the expense of agricultural sector since the 1980's. Regarding the service sector, in the 1970's its share was equal to that of the industrial sector, but in the 1980's it fell. The economic reforms stimulated the service sector to recover in the 1990's. Further, three major sub-sectors - manufacturing, real estate, ownership dwellings and business services, and transport by other means – had played a prominent role in the growth of investment in private sector since the 1990's.

The analysis has shown that the industrial sector was the major contributor to the growth of private investment in India. There was a steady increase in the contribution of the industrial sector to the growth of private investment. The role of the sub-sectors of manufacturing, real estate, ownership of dwellings and business services, and transport by other means were significant in the growth of private investment in India.

The growth of rate of capital formation was very significant in real estate, ownership of dwellings and business services sub-sector. This sector, which includes Information, Communication and Technology (ICT), was very important in attracting private investment during the economic reforms period in India. This sub-sector comes under the group of producer services in the services sector. The analysis has shown that the contribution of this sector was the highest in terms of share in private investment within the producer services sector as well as the service sector as a whole. This sub-sector was also the major contributor to the growth of private investment within the producer services group and the whole of the service sector.

The analysis of the structural transformation in terms of the allocation of private investment showed that structural transformation had taken during this period.

Annexes

Annex: A

The study uses the sectoral classification done by NAS. However, the railways and public administration are operated and owned by the public sector. Hence, there is no role for private investment in these sectors in India.

The methodology for the compilation of private GFCF for this study is as follows.

1. The private GFCF by industries is the difference between the GFCF of economy and public sector by industries
2. NAS gives the information on GFCF in the whole trade and hotels and restaurants for the economy before 1980-81. But we need to have the same information for its sub-sectors trade and hotels and restaurants. There is no estimate of GFCF by industries for the public sector before the period 1980-81.

Therefore, in order to have complete information for this study on private GFCF by industries, we need to solve the above two problems thus:

(A) The public GFCF for the period 1969-79 is obtained using the following steps

a) The GDP share of trade, hotels and restaurants is obtained for the economy.

b) The above share is used to generate the separate estimates of GFCF in these two sub-sectors of trade, hotels and restaurant sector.

(B) The public GFCF for the period 1969-79 is obtained using the following steps

a) Change in stock (CIS) of the economy is allocated on the basis of public sector's share in GCF economy.

b) Public GFCF by industry of origin is the difference between the GCF and CIS by industry of origin.

Sectoral Classification
1. Agriculture, Forestry & Fishing
1.1. Agriculture
1.2. Forestry
1.3. Fishing
2. Mining & Quarrying
3. Manufacturing
4. Electricity, Gas & Water Supply
5. Construction
6. Trade, Hotels & Restaurants
6.1. Trade
6.2. Hotels & Restaurants
7. Transport, storage & communication
7.1. Railways
7.2. Transport by Other means
7.3. Storage
7.4. Communication
8. Financing, Insurance, Real estate & Business Services
8.1.Banking & insurance
8.2. Real estate , Ownership of Dwellings & Business Services
9. Community, social and personal services
9.1. Public administration & defence
9.2. Other services
10. Total

Source: NAS

Annexe 1: Rank of Sub-Sectors in Terms of Share in Private Investment

Sub-Sectors	1967-79	1980-92	1993-2005
1.1	3	2	4
1.2	13	14	15
1.3	9	11	10
2	8	12	13
3	1	1	1
4	11	9	7
5	7	8	8
6.1	4	5	6
6.2	10	7	11
7.2	5	4	3
7.3	14	13	14
7.4	15	15	12
8.1	12	10	9
8.2	2	3	2
9.2	6	6	5

Source: Author's Calculation

Annexe 2: Rank of Sub-sectors in Terms of Contribution to Growth of in Private Investment

Sub-Sectors	1967-79	1980-92	1993-2005
1.1	2	4	9
1.2	14	14	15
1.3	13	11	12
2	5	7	6
3	4	1	1
4	6	6	11
5	10	10	8
6.1	1	12	7
6.2	9	5	13
7.2	7	2	4
7.3	8	13	14
7.4	15	15	2
8.1	11	8	10
8.2	3	3	3
9.2	12	6	5

Source: Author's Calculation

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