PRIVATE CORPORATE INVESTMENT IN INDIA

TRENDS PATTERNS AND DETERMINANTS

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I hereby affirm that the research for this dissertation titled "Private Corporate Investment in India, Trends Patterns and Determinants" being submitted to the Jawaharlal Nehru University for the award of the Degree of Master of Philosophy was carried out entirely by me at the Centre for Development Studies, Trivandrum.

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Certified that this dissertation is the bonafide work of M.R.Anand. This has not been considered for the award of any other degree by any other University.

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INTRODUCTION

The distinctive feature of the path of economic development followed by India since independence has been the stepping up of the rate of investment and channeling it into socially desirable ends within a plan framework. While investment targets for the public sector were worked out in detail in successive five year plans, the targets for the private sector were indicative and based on projections of existing trends of supply and demand for the relevant product. To channel private investment according to plan priorities, various instruments of government control such as industrial licensing, foreign exchange regulations and price / distribution controls were introduced over time. These controls did circumscribe the area available for investment by the private corporate sector. In particular, the system of capacity based licensing placed restrictions on the total quantum of investment by the private sector in any particular area.

The control systems (popularly called the 'license raj') remained in place for long. During the eighties, some of these controls on private investment were relaxed. To illustrate, schemes allowing rendorsement of higher capacity, minimum economic plant sizes etc. were introduced for various industries with a view to promote economic efficiency of investment. A scheme for broad-banding of licences was introduced whereby, private sector companies could manufacture a broad range of related products instead of being restricted to a single specific product. Import restrictions were also relaxed to some extent in the eighties. In spirit, these moves

were to allow the private sector, in particular, the large industrial houses greater scope for expansion and diversification of industrial investment - in short, a move towards liberalization. The liberalization of the eighties however, was very much within the existing framework of a licensing regime.

The industrial growth during the eighties has attracted attention of researchers (Kelkar and Kumar, 1990, Nagraj 1990a and 1990b). In fact, some economists brought to light the increase in the growth rate of output from the second half of the seventies (Raj 1984). The industrial sector has been studied from the perspective of changes in output, productivity and such other aggregates (Ahluwalia 1991). However, 'investment' by the 'Private corporate sector' (during this period) has not been subjected to detailed analysis. This is surprising. For, investment logically precedes changes in output. This apart, the relative importance of the private sector in the economy has grown during the eighties. Therefore, our study on private corporate investment during the eighties intends to fill this gap in the literature on the Indian economy.

Investment theories, an overview: We first take a brief look at the literature on business investment with a view to identify certain issues, and to formulate the objectives of our study. At the outset, it may be stated that investment can be categorized in various ways, depending on its form as well as its use. A distinction can be drawn between physical and financial assets. At the aggregate level it is physical investment that assumes greater significance. However, a given firm or even an industry has the

option of investing in either of the two categories. Investment in physical assets can either be in the form of fixed assets or in inventories. When it comes to fixed assets, one could again draw a distinction between productive assets such as plant and machinery and other fixed assets such as land, buildings, furniture etc. The bulk of the literature in this context is on the factors that influence fixed investment.

The factors that a firm may consider while making an investment decision can be formulated as follows. A rational decision rule is that an investment is worthwhile if the discounted present value of the future revenues, less the future costs, exceeds the total cost incurred in the purchase of a capital asset. Various equivalent and alternative criterion (eg. the internal rate of return) can be found in the textbooks. In the above formulation, changes in the value of all or any of the variables that influence the future revenues or costs such as wages, rate of interest, availability or price of capital goods, could in turn affect the net present value of an investment. The extent to which investment decisions are influenced by changes in each of these variables suggests different theories of investment. Literature on the subject consists of different theories / models that have stressed the importance of one or more of these variables in determining investment.

The Classical theory (Ackley 1978:143) assigned a central role to the rate of interest in bringing about an equality between ex-ante savings and investment. In contrast to the classical view, Keynes drew attention to the existence of an independent investment function in the economy, and observed that investment depends on

the prospective marginal efficiency of capital relative to 'a rate' which reflects the opportunity cost of invested capital. At the macro level, Keynes saw no reason for ex-ante savings to be equal to ex-ante investments. The demand curve for capital was postulated to be interest inelastic. He also pointed out the inherently unstable nature of investment and laid considerable importance on the role of expectations, stock market valuation, political changes etc. in determining the rate of private investment.

Principle of the Accelerator: That increments in investment could lead to larger increases in the level of output through the multiplier process was a contribution of Keynes. But the idea that investment too could depend on the level of output and income in an economy is attributed to J.M.Clark, who introduced the idea of the Accelerator. The Acceleration principle is based on the view that size of the capital-stock desired by entrepreneurs, depends on the level of demand, which in turn is represented most closely by the level of output. This idea is also linked to the development of growth theories and theory of business cycles.

Neoclassical investment theory: In the post 1960 period, we see the emergence of investment models which drew sustenance from work of Jorgenson (1967). The simple version of Jorgenson's model relies directly on the theory of a profit maximizing firm subject to a production function through which a technical relationship between inputs and output gets defined. The production function also connects the capital stock to the relative price between capital and output. The model assumes flexible factor prices and that all markets including the capital market are perfect. If relative

prices are treated as constant, then Jorgenson's model reduces back to the simple accelerator model originally envisaged by Clark. The policy implication of assuming the relative prices as constant is that monetary policy acting through the rate of interest is irrelevant in influencing investment.

The accelerator and the relative price of capital have together formed the basis of several empirical models which incorporate the demand side factors (eg. output) and supply related factors (eg. price of capital) in a single expression. Investment is thus effected through a process of adjustment of the capital stock to a desired level, which in turn is taken to depend on changes in the level of demand. Several innovations on the basic concepts outlined above have followed. Chenery (1952), suggested the flexible accelerator as an alternative to the simple accelerator model. According to the flexible accelerator hypothesis, adjustment of the capital stock to the desired level is not instantaneous because of delivery lags and delayed response to changes in the level of demand.

With these developments, time lags between changes in determinants, investment decisions and actual investment came to be recognized. There has been some discretion in the use of specific lag structures in the specification of various models. Different kinds of specifications for incorporating lags are discussed in standard texts on econometrics (Johnston, 1988).

Another alternative formulation to the accelerator model was introduced by Eisner (1963) who argued that relating current investment to current values of income or output is an oversimplification. If a current change in output or sales is not seen be long lasting, then entrepreneurs tend to find other ways of meeting the additional demand (say by running down the inventories). Only a sustained change in the demand could induce further investment. In taking investment decisions, firms attach greater importance to industry wide sales than to their own sales.

Financial theories of investment: An alternative to the accelerator models is provided by theories that explain investment in terms of financial variables. These theories are premised on the notion that investments are influenced or constrained by the availability of internal funds. Important among these, are studies by Meyer and Kuh (1957) and Duesenberry (1958). These authors have essentially tried to relate investments to current volume of cash flow and access to external funds. They explain that periods of heavy investments tend to be self limiting due to the heavy impact on the balance sheets of firms. As debts accumulate in relation to equity, the access of the firm to external funds also gets reduced. More recent studies (Fazzzari et al 1988; Calomiris and Hubbard, 1989 etc.), suggest that liquidity and financial effects are important for investment. They also challenge the traditional view of frictionless capital markets.

The 'q' theory: Brainard and Tobin (1968) and Tobin and Brainard (1977) postulated the 'q' theory, wherein, investment is considered to be positively related to the value 'q', where 'q' is the ratio

between the aggregate market value of the outstanding stock of the firm to its physical assets valued on replacement basis. An alternative version is where the value of 'q' is computed not as an average but as a marginal value.

It may be noted here that all the models presented above barring some recent reformulations of the 'q' model are essentially based on static expectations. Since expectations are necessarily realized, even if a time structure for lags is introduced they remain essentially static models (Chirinko 1993)

Explicit models and recent research: Chirinko (1993) has classified models which specifically include non static expectations as 'explicit' dynamic models as opposed to the distributed lag models of the neoclassical type. Most of these studies (explicit models) capture the dynamic aspects through the assumption that, the firm faces non zero adjustment costs in varying the level of the capital stock. The general approach in these models is to use dynamic programming methods. The optimal capital stock and thus the rate of investment is determined by maximizing the discounted value of the expected cash flows which take into account the expected adjustment costs. Incorporating exogenous shocks explicitly has also been a feature of more recent models.

Investment decisions that arise from the existence of sunk costs (ie. irreversible investment) has also attracted considerable attention (eg. Pindyck 1988, Joseph 1987). When investment is irreversible and the future demand or cost conditions are

uncertain, an investment expenditure involves the exercising, or killing of an option - the option of investing in future (Pindyck 1988). In these models, a value is also assigned to the option of retaining the choice of investing at a later date when greater amount of information would be available. This idea is nothing but the standard concept of an opportunity cost, now used in an inter-temporal sense. According to Joseph (1987), greater the level of uncertainty, firms accordingly tend to postpone or reduce the level of investment. Models incorporating irreversibility explicitly recognize that capital assets once bought may not be mobile between different uses.

Another area that has again attracted the interest of researchers is the link between the market structure and volatility of investment. Scherer (1969) had concluded that variability of investment is greater in industries with greater market concentration as compared to highly competitive industries. Nishimura (1992) comes to a different conclusion that increased competition increases the volatility of investment under imperfect information about the average investment, regardless whether the shocks are on the supply or the demand side. On the whole, the more recent literature suggests that the economic environment and the nature of uncertainty arising from changes in the policy, regarding interest rates, exchange rates or other variables and the informational status of agents can significantly affect investment decisions.

Empirical studies and studies on India: In the international literature, a very large number of empirical studies have been carried out based on varied theoretical formulations. An exhaustive survey of empirical studies on business investment is provided in Jorgenson (1971). The latter day models have been surveyed in Pindyck (1991) and Chirinko (1993). While it does not appear to be necessary to go into details of these empirical studies, it may be pointed out that there is virtually no uniformity in the results of the different studies. Bischoff (1971) carried out a comparative evaluation of different alternative theories (prevalent at that point of time) by using a single body of data. He tested for the generalized accelerator model, a cash flow model, a version of the neo classical model, and Tobins securities value model. He found that investment equations representing each of these different theories, proved to be consistent with data for a common period covering several complete business cycles. On the balance, there appears to be a general consensus that quantity variables such as output and sales seem to do better than price variables in explaining in' stment (Chirinko 1993). The relationship with financial variables is seen to be relatively unstable across time.

Most studies on investment behavior of the Indian private corporate sector pertain to the 1960s and 70s and use a combination of the accelerator, profits and financial variables for explaining investment. There is a recent attempt by Agarwal (1987) to test Tobins 'q' theory and another by Siddhartan, Pandit and Agarwal (1992) to apply the Marris model of firm behavior. Bagchi (1962) analyzed cross section data on joint stock companies in different

industries and concluded that profit had a powerful effect on investment during the fifties. Krishnamurthy (1964) studied the determinants of investment for the period 1948 to 1961, using aggregate time series data and found that capacity utilization, profits and the long term rate of interest, when taken together, explain private investment in plant and machinery. Divatia and Athawale using time series data (1955-70) for the corporate sector as a whole, found the accelerator and profits to be explaining gross capital formation. Krishna and Krishnamurthy (1974) analyzed the link between public and private investment for the period 1950-51 to 1965-66 and found that public investment expenditure is an important determinant of private corporate investment.

Sarkar (1970) using a bivariate distributed lagged model for individual industries concluded that profit investment relationship is more important than investment sales relationship. Shastry (1975) studied the investment behavior for the capital goods industry and noted that the accelerator does not have a significant influence on investment. Krishnamurthy and Shastry (1971) using cross section data for the Chemical industry (for the period 1962-1967) found that retained earnings are important when supply of funds is limited.

In a relatively detailed study (for the period 1960 to 1970) Krishnamurthy and Shastry (1976) analyzed the interactions between investment (both fixed and inventory), dividends and financing decisions. They estimated separate relationships for each industry using pooled cross section data on firms. This enabled them to comment on the relative importance of the determinants, namely,

accelerator, profits and external finance in respect of individual industries. The study brings out the importance of both the accelerator and financial variables as determinants of investment. However, they note that in industries subject to extreme forms of price and distribution controls (eg. sugar and cement), the accelerator was not very important. Their results also show that fixed investment and investment in inventories are competitive in the short run though not necessarily in the long run. This is an interesting finding if we recall the criticism put forth by Eisner (1963). On the whole, the study concludes that profitability is an important consideration in entrepreneurial investment decisions. Profits influence dividends and hence, retained earnings. Retained earnings in turn influence investment. Dividends influence the flow of external funds, which again influences investment.

In a more recent study, Agarwal (1987) has attempted to test the 'q' theory using cross section and time series pooled data on the automobile industry for the period 1966-67 to 1985-86. He has concluded that rapid technological changes due to imported capital could make new capital (equipment) more attractive than old capital and thereby, boost investment, even if the value of 'q' is less than one. The relative performance of the firm as compared to the industry as a whole is more meaningful in determining investment.

Although, empirical studies based on Indian data also show varying results, one could say that profits and flow of external funds have played a more important role in determining private corporate investment as compared to the accelerator or other quantity variables. Nevertheless, our earlier observation that there is a

general lack of unanimity in empirical results on the determinants of investment still holds. This may be on account of the fact that these studies have been at different levels of aggregation, covering different time-periods and different industries. In the Indian context, it is also seen that public investment has been considered as an important explanatory variable of private investment. This is on account of the development strategy adopted during the post independence period.

Some issues: The existing literature on determinants of investment has been conditioned by the idea that there exists an 'optimal' size of the capital stock which firms try to achieve. Further, there is an implicit assumption that fixed-investment decisions of the firms are independent of the decisions to invest in financial assets. This view of the behavior of the firm arises, perhaps, from the emphasis on the determinants of investment in productive assets ie. plant and machinery. It is also because the literature on business fixed investment has traditionally focused on manufacturing firms. However, a look at the present day world suggests, that corporate bodies invariably have multifarious activities and financial investments can also be one of them. Would the prospect of making short term capital gains on financial assets persuade a manufacturing firm to deploy its financial resources any differently? Why would a firm at any given point of time, prefer to invest in financial assets (even if it is only at the margin) rather than in plant and equipment? Is it for diversifying risk, managing liquidity, or even to keep the option of investing on a later date? The literature on irreversibility that we have referred to earlier, may have some relevance in this context.

Empirical studies are mostly silent on these questions, at least in the Indian context. There are hardly any studies that have tried to link the financial investment and fixed investment behavior of corporate entities especially in the Indian context.

Financial theories of investment, as pointed out earlier, do emphasis that availability of funds is an important determinant of fixed investment. There is indeed a body of theoretical literature (starting from Modigiliani and Miller 1958, to Myers 1984) which go into the implications of financing through alternate routes such as internal versus external funds and debt versus equity on the value of the firm and into the determinants of the capital structure of a firm etc. We do not intend going into these aspects as such. But the answer to the question, on how decisions to raise finance from alternate sources, and decisions to deploy the same into different uses, are together, influenced by changes that may occur in the policy environment is not very straight forward. Theoretical and empirical literature, which explain the link between decisions to raise finance through different sources and the decisions to deploy it into different uses, be it fixed investment, financial investment or inventories, appears to be sparse. Nevertheless, some observations of F.X. Browne [1] on the applicability of alternative theories of finance in the context of certain industrialized countries are instructive.

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[1]. F.X. Browne (1994) Corporate finance: stylized facts and tentative explanations, Applied Economics, (26),pp 485 and 491.

To quote:

> " Prudential policy makers should be interested (in corporate financing) because certain debt equity settings for the non financial corporate sector might contain the seeds of financial fragility for the banking system and could in turn portend economy wide systemic weakness."

Browne further notes that:

> " Measured either as the ratio of short term or total financial assets to sales, corporate liquidity ratios rose sharply from the early 1980s for the United states, Japan, France and the United Kingdom. . . . These trends suggest that corporate liquidity is becoming decoupled from the day to day transactions needs of firms and increasingly portfolio-related."

It has also been recognized that growth of the financial system helps to accelerate economic growth. It could facilitate the migration of funds to the best uses that yield a higher rate of social return (Goldsmith 1969). Financial factors are also significant as they influence the availability of funds required to finance capital formation therefore, there exists a strong relationship between real and financial variables in an economy (Dornbush and Reynoso, 1989). However, the design of a financial system may stimulate savings and investment in productive uses or it may retard savings and divert it to inefficient uses (Gurley and Shaw 1960). The link between the development of a financial system and the growth in real output has been commented upon by Patrick (1966), who classifies a financial system as 'demand following' or 'supply leading' depending on whether the creation of financial institutions, financial assets and liabilities is in response to

(ie. follows) the demand for their services, or are created in advance. He has also argued that the financial system can influence capital stock first, by bringing about a change in the ownership and composition of tangible assets through intermediation among various types of asset holders. Second, it can encourage more efficient allocation of new investment from relatively less to more productive uses. Third, it can induce an increase in the rate of accumulation of capital, by providing a higher incentive to save, invest and to work. In what way changes in the financial system can influence the investment behavior of corporate bodies is again an issue that deserves detailed study.

In our study, we do not intend to examine the development or the functioning of the financial system in India as such. Nor, do we intend examining the entire range of issues that we have raised. But these issues are relevant in the context of the changes that have occurred in the functioning of the private corporate sector as also the policy environment in India especially during the eighties. This was a decade when there was a conscious effort to allow greater room to the private sector to expand and diversify. A significant change during this period was the growth in capital markets and its emergence as a source for raising additional capital by the private corporate sector. While the activities of the financial institutions in providing direct support through lending continued, it is the indirect support to the private corporate sector through subscription to primary issues, underwriting operations etc. that increased during this period. As compared to the earlier decades, there is a basis to consider this decade as an initial phase of liberalization.

Given the above background, it becomes pertinent to examine the trends, patterns and determinants of investment (especially fixed investment) by the private corporate sector during the eighties which can be termed, as being, 'relatively liberal' as compared to the earlier years. It also important to examine the extent to which improved access to external funds motivated or enabled the private corporate sector to invest in productive assets. A commonly expressed apprehension is that the corporate sector has been diverting financial resources into speculative investment instead of investing in productive assets. While there is little by way of existing evidence on which we can rely, it is important to see whether this contention is empirically sustainable. It is in this context that the role of financial assets becomes important.

The points that we raised in the previous paragraph need to be examined keeping in view, the relative importance of the private corporate sector in the economy, especially in comparison with the public sector. (This is because public investment has accounted for a predominant share of the investment in the country. Changes in the pattern and growth of public investment may therefore have influenced private corporate investment as well. For these reasons, a study on private corporate investment in India cannot afford to ignore the role of the public sector and the kind of inter-linkages that have existed between the two.)

The study will therefore, focus on the period 1975 to 1990. The logic for selecting 1975 as the starting point is that the industrial sector showed a revival in terms of growth rates of output from mid (or late) seventies onwards, after going through a

phase of stagnation during the sixties (Raj 1976 and 1984). Before analyzing the composition of private corporate investment during the period under study ie. 1975-1990, we intend analyzing the overall trends in private corporate investment and its relative importance as compared to public investment during the earlier periods starting from 1950. This would enable us to place the subsequent analysis in a proper perspective. The focus of the study would nevertheless be 1975 to 1990, and within that, the eighties, which is a period when a series of policy changes introduced.

Objectives:

This study has, therefore, the following specific objectives:

a) To bring out trends in the aggregate investment, and changes in the share of private corporate investment relative to public investment during the period 1950 to 1990, in particular, during the period 1975-1990.

b) To examine the pattern and composition of private corporate investment, particularly, in terms of fixed and financial investment, and to investigate into the reasons, underlying the changes.

c) To analyze the determinants of fixed investment in light of the observed trends, patterns and composition of investment.

Scope and plan of the study: Private corporate investment can be studied at different levels of aggregation. The questions that one may hope to seek answers for, and the behavior of variables at varying levels of aggregation can be expected to be quite different. Decisions to invest, may be taken by a firm based on

demand factors, liquidity position, profits, return on financial assets and factors relating to the relevant industry. These decisions may at best affect the overall profitability, sales etc. of that firm. But, such decisions by an aggregate of firms may have a different message for the functioning of the economy as a whole. The study that is to follow is essentially at the aggregate level for the private corporate sector as a whole.

The study is presented in five chapters. In Chapter II the trends in fixed capital formation in the private corporate sector are compared with the economy as a whole and in particular the public sector. The purpose of this exercise is to bring out the importance of the private corporate sector vis-a-vis the other constituents in the economy, namely, the public and the household sectors. Given the importance of public investment in the Indian economy, the chapter makes a digression into examining the relationship between public and private investment and the changes therein through different sub-periods during 1950-1991.

In Chapter III the pattern and composition of private corporate investment during the post 1975 period will be discussed. An attempt will be made to investigate into the reasons underlying the changes in composition of investment, especially fixed and financial investments. Finally, we will look into possible effects of the changes in the pattern and composition of investment discerned. We then turn to the question of determinants of fixed investment and other related aspects, in chapter IV. The findings of the study are brought together and on that basis some conclusions are drawn in chapter V.

Needless to say, this study has certain limitations. Monetary, credit and fiscal policies, are important, particularly in the context of fixed and financial investment. While the study does go into the structure of interest rates and changes therein, the effects of changes in monetary, credit and fiscal policies will be outside the scope of this study. Similarly, changes in the external sector will only find a passing mention though we recognize its importance. There are other limitations arising mainly from considerations of data, and these are discussed in the following paragraphs and also in Appendix I.

Data sources: Analysis in Chapter II is based on data on capital formation from the National Accounts Statistics published by the Central Statistical Organization (CSO). This includes physical capital formation and excludes financial assets. The National accounts cover the entire private corporate sector, which includes, public and private limited companies and cooperatives. With 1980-81 as the reference year, the CSO brought out a 'New series' replacing estimates prepared earlier with the base year as 1970-71. This series was introduced after a review of the data base and the methodology employed.

The CSO has since published a revised series for the previous years, that is, from 1950-51 to 1979-80. However, for the previous years, gross capital formation by type of asset and by type of institution in the revised series is available only at current prices. A separate constant price series based on the revised methodology has not been published by the CSO. For arriving at the value of gross fixed capital formation in the private corporate

sector, the public sector and the household sector at constant prices, we have calculated the implicit deflator for construction and plant and machinery components separately and then deflated the current price series.

While the method employed for deflating is standard, it is worthwhile to recall a statement made in the introduction to the Brochure on the new series brought out by the CSO[1] which states that:

> " ... in some aggregates there are wide variations between the new series and the older 1970-71 series. Therefore, the comparison of the various aggregates (Old versus new Series) at constant prices is however done in terms of annual growth rates, as comparison of value figures will not be meaningful."

There have been changes in the method of accounting for depreciation of the capital stock for the public sector. However, as we are mainly concerned with changes and growth in capital formation, it is felt that the problem of comparability may not influence our findings.

In chapter III and chapter IV, we rely on the data published by the Reserve Bank of India (RBI) on the finances of non government non financial public limited companies based on periodic surveys conducted on a sample basis. While the sample of companies can be considered to be representative of the private corporate sector, the sample size has been changing from one study to another. For

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[1] Central Statistical Organization, Government of India, Brochure on the New Series on National Accounts Statistics with 1980-81 as the Base year, (1986) pp 3.

this reason, the available methods of arriving at a continuous time series have been studied. After which, an alternative method suitable for the purposes of this study has been arrived at. The details in this regard are presented in a separate note contained in Appendix I to the study.

Methodology : The method of analysis is mostly based on simple graphical exposition and the use of ratios and percentages. Almost all growth rates over a period have been computed statistically using the exponential growth function. For purposes of examining the relationship between public and private investment (in chapter II) and for studying the determinants of investment (in Chapter IV) the Multiple regression technique has been used with some simple specifications. Chapter III also makes use of financial ratios relating to profitability and asset utilisation. Changes in certain aggregates, such as fixed assets, sales, investment etc. have been studied through value indices based on a method presented under Appendix I. The notations for variables have been provided as and were required.

Chapter II

TRENDS IN CAPITAL FORMATION

Investment, as measured by capital formation is considered an important determinant of growth of output and income in an economy. Apart from the volume of investment its composition is also important. The composition, can be seen in terms of the field of investment (eg.infrastructure versus manufacturing) or in terms of the types of institutions (viz. public, private or the household sectors). The main purpose of this chapter is to bring out the relative importance of the private corporate sector and changes therein over the years. In section I, we examine the trends in capital formation in the private corporate sector as well as the public sector. We also explore the relationship between public and private investment in Section II. The period of analysis is from 1950 to 1990.

Section I

We begin by looking at the movements of gross domestic capital formation in the country through Table 2.1, which shows the gross domestic capital formation for the public sector, private corporate sector and the household sector at different time points. The gross domestic capital formation as a percentage of the GDP has in general moved up from about 11 percent in 1950-51 to over 26 percent by the end of 1990-91.

Table 2.1

Rate of gross capital formation
(as % of GDP)

Year	Public Sector (1)	Pvt.Corp Sector (2)	House hold sector (3)	Total --- (4)
1950-51	2.8	2.3	6.0	11.1
1954-55	4.3	1.4	5.0	10.7
1959-60	6.1	2.0	6.2	14.3
1964-65	7.9	3.6	4.9	16.4
1969-70	5.6	1.6	8.8	16.0
1974-75	7.6	3.7	8.5	19.8
1979-80	10.3	2.6	9.9	22.8
1984-85	10.8	4.4	5.9	21.1
1989-90	10.7	4.4	11.1	26.2
1990-91	10.5	4.7	11.3	26.5

Source: Computed from National Accounts Statistics (New Series), CSO.

The rate of capital formation in each of the three sectors has gone up. While gross capital formation in the private corporate sector as a percentage of GDP moved up from around 2 percent in the 1950s to around 4.5 percent by the end of the eighties, the figure moved up from around 3 percent to around 10.5 percent for the public sector during the corresponding period.

The relative share of public, private corporate and the household sector in gross capital formation (GCF) for the economy as a whole can be discerned from Table 2.2. The share of the public sector in GCF moved up steadily from about 25 percent to reach a peak of about 50 percent in 1965-66. From 1965-66 to 1975-76, the share of the public sector remained generally around or below 40 percent. From 1975-76 onwards we notice an improvement in the share of the public sector which reached a peak level of over 51 percent in 1984-85. The share of the public sector dropped to about 40 percent by the end of the eighties.

Table 2.2

Percentage shares of public, private corporate and house hold sector in capital formation

Year	GROSS CAPITAL FORMATION			GROSS FIXED CAP.FORMATION		
	PUBLIC (1)	PVT.CORP (2)	HHS (3)	PUBLIC (3)	PVT.CORP (4)	HHS (5)
1950-51	25.05	20.70	54.25	25.63	9.61	64.76
1955-56	35.24	15.40	49.36	41.54	7.87	50.59
1960-61	44.21	20.71	35.08	48.93	15.12	35.95
1965-66	50.06	15.72	34.22	49.52	9.63	40.85
1970-71	38.05	13.96	47.99	37.97	9.83	52.20
1975-76	46.22	13.04	40.74	42.01	13.23	44.76
1980-81	41.36	12.12	46.52	44.50	13.48	42.02
1985-86	49.30	23.00	27.70	50.69	18.51	30.80
1990-91	39.65	17.61	42.74	40.63	16.51	42.86
1991-92	39.58	17.62	42.80	40.39	17.38	42.23

Source : Same as Table 2.1

As regards the private corporate sector it can be seen that its share in gross capital formation went up to about 23 percent by the mid eighties which is comparable to the level that existed in 1950-51. An interesting point to note is that till 1975-76, the difference between the relative share of the private corporate sector in gross capital formation as compared to its share in gross fixed capital formation was very large. However, after 1975, this difference appears to have narrowed down, suggesting thereby a shift in the composition of capital formation in the private corporate sector in favor of fixed assets from mid seventies onwards (Ref Table 2.2, col. 2 & 5). From the data in Table 2.2 it can be concluded that from mid seventies onwards, the importance of the private sector in gross capital formation, as also gross fixed capital formation increased in relative terms.

The share of the household sector over the entire period came down from over 54 percent in 1950-51 to around 42 percent by the late eighties. The share of the household sector in the first half of the eighties declined to about 28 percent by 1985-86 from a level of 46 percent in 1980-81. However, in the second half of the eighties, the share of the household sector moved to around 42 percent. It is useful to remember in this context that, the household sector in the National accounts statistics includes unincorporated and household enterprises as well.

Table 2.3

Composition of fixed capital formation

(percent)

Years	PUB. SECTOR		PVT. CORP.		HOUSEHOLDS	
	CONST (1)	M/C (2)	CONST (3)	M/C (4)	CONST (5)	M/C (6)
1950-1951	75.45	24.55	17.86	82.14	79.33	20.67
1955-1956	79.36	20.64	21.78	78.22	56.24	43.76
1960-1961	64.08	35.92	30.98	69.02	72.26	27.74
1965-1966	67.30	32.70	28.64	71.36	51.48	48.52
1970-1971	64.62	35.38	16.94	83.06	70.13	29.87
1975-1976	51.29	48.71	12.82	87.18	71.09	28.91
1980-1981	59.01	40.99	14.35	85.65	56.52	43.48
1985-1986	55.62	44.38	14.53	85.47	64.02	35.98
1990-1991	51.62	48.38	11.22	88.78	52.83	47.17
1991-1992	51.24	48.76	11.17	88.83	61.12	38.88

Const : construction, M/C : plant and machinery.
Source : Same as Table 2.1

The composition of gross fixed capital formation in each of the three sectors is presented in Table 2.3. It shows that the share of construction in the gross fixed capital formation has declined over the years. This pattern has been most pronounced for the public sector (Table 2.3, columns 1 & 2). In the case of the public sector, this pattern could also be indicative of a shift away from taking up of infrastructure projects such as roads, highways,

bridges etc. We shall be looking at the sectoral composition of capital formation by the public sector later in this chapter. For the private corporate sector this can be broadly explained as being the consequence of the growth in manufacturing activities.

Trends in capital formation: Coming to the pattern of growth and breaks therein, figure 2.1 shows the movements in gross fixed capital formation in the private corporate sector and the public sector at constant prices. Figure 2.2 shows indices of the log values of gross fixed capital formation in the public and the private corporate sector. The slope of the graph in figure 2.2 is nothing but the growth rate of fixed capital formation for the public sector and the private corporate sector respectively.

It is seen that gross fixed capital formation for the public and the private sector showed high rates of growth during the initial period from 1950-51 to 1965-66. The period 1965-66 to 1975-76 has been commonly referred to as one of stagnation when looked at from the point of view of production and value added. It is apparent from both figure 2.1 and figure 2.2, that gross fixed capital formation in public sector and the private sector also stagnated during this period. However, from around mid seventies onwards for the public sector and from the late seventies onwards for the private corporate sector, there appears to have been a recovery in the growth of gross fixed capital formation. The recovery appears to have been especially marked for the private corporate sector.

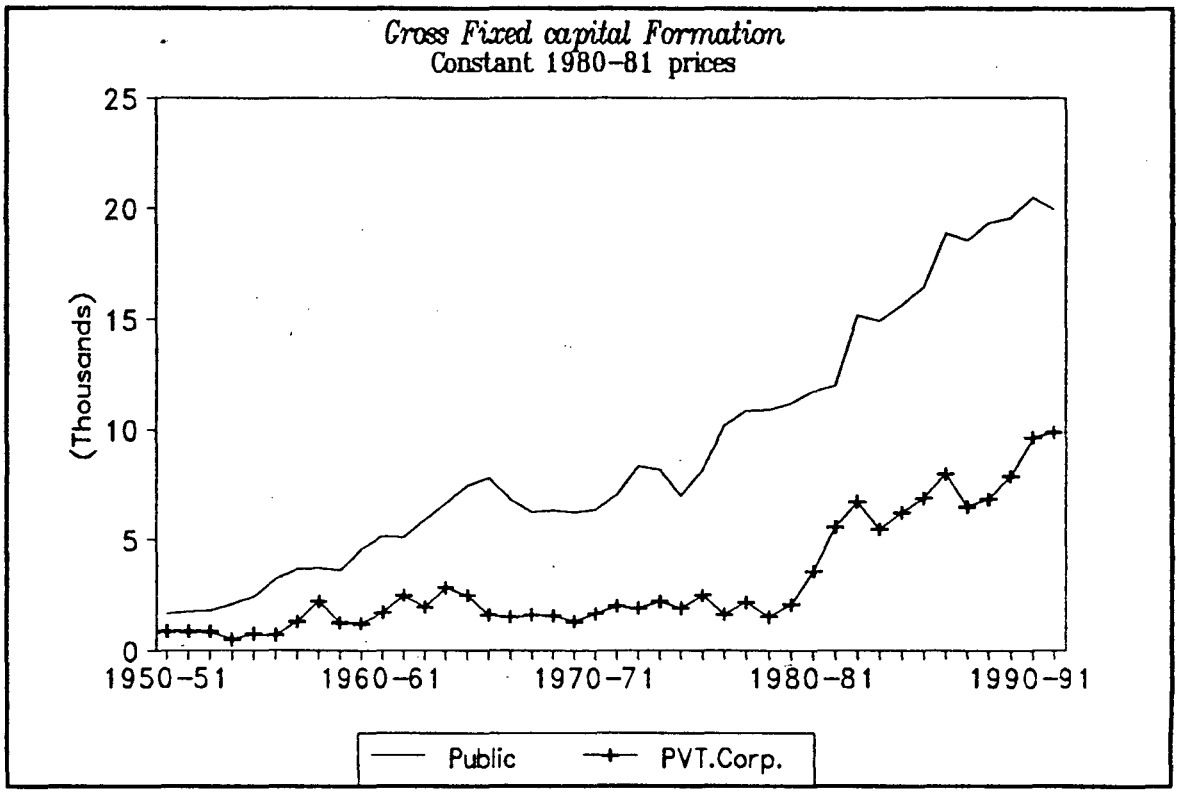

Figure 2.1

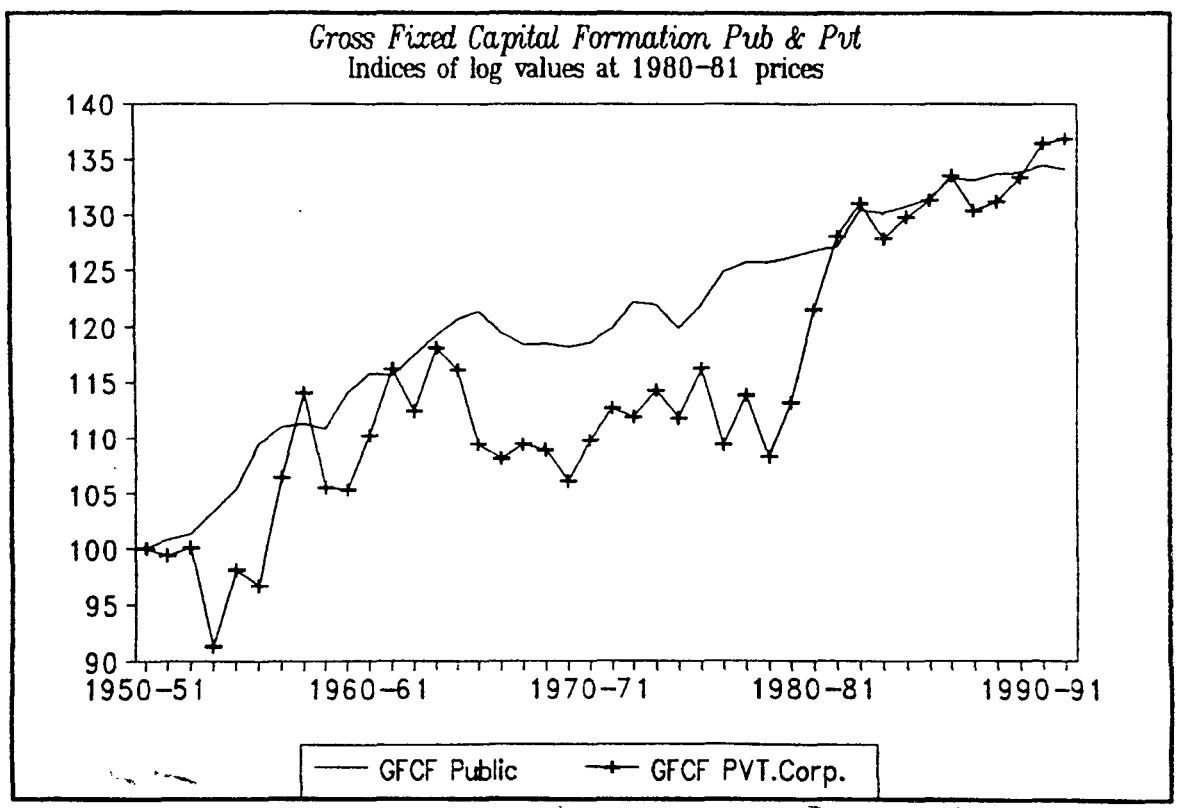

Figure 2.2

The rates of growth in Gross Capital Formation and Gross Fixed Capital formation by the public and the private corporate sectors (in real terms) presented in Table 2.4 also confirm the growth patterns seen the graphs presented earlier.

Table 2.4

Growth rates of gross fixed capital formation for the public sector and the private corporate sector (@)

Period ->	1950-51 1990-91	1950-51 1964-65	1964-65 1975-76	1975-76 1990-91
Public Sector	5.88	11.80	1.10	5.99
a) Construction	4.52	11.10	-0.03	3.44
b) Plant & M/c	7.91	13.49	2.90	8.68
Pvt.Corp Sector	5.79	11.02	2.20	12.54
a) Construction	4.37	16.56	-2.30	7.46
b) Plant & M/c	6.06	10.03	3.39	13.27
Household	4.02	1.25	2.90	3.86
GFCF (Total)	5.04	6.68	2.30	5.95

@ Exponential Growth rates computed at constant prices.

The growth in gross fixed capital formation during the period 1950-65 was as high as 11.8 % for the public sector. This period also includes the third plan period (1961-62 to 1965-66) which laid great emphasis on public investment. The private corporate investment also grew at a comparable rate of 11.02 % during this period. However, the subsequent period from 1965-66 to 1975-76 witnessed stagnation in both public and private investment. In what has been termed as the period of recovery starting from the late seventies and continuing up to the end of the eighties, the major impetus to growth in capital formation has undoubtedly been from the private corporate sector. Between 1975-76 and 1990-91 gross

fixed capital formation in the private sector grew by over 12 percent in real terms. The growth rate for the private corporate sector was not only higher than the earlier period of 1965-1975 but also higher than the rate for the entire period from 1950 to 1990.

Growth in public investment also recovered during this phase yet, it was not significantly higher than its long term trend rate. Public investment grew at about 6 percent per annum between 1975-76 and 1990-91 as compared to 5.88 percent during the entire period ie. 1950-51 to 1990-91. The shift in the pattern of capital formation in the public sector in favor of plant and machinery as compared to construction becomes evident from this table. It is seen that investment by the public sector in construction grew at only 3.4 percent between 1975-76 and 1990-91 as compared to 8.7 percent in the case of plant and equipment for the corresponding period.

Based on the aforesaid analysis, it can be concluded that while the public sector continued to be predominant in terms of its share in gross capital formation in the country, the importance of the private corporate sector grew in relative terms especially, during the period 1975 to 1990. It is clear that the revival in the growth of capital formation during this period was predominant in the private corporate sector relative to the public sector.

Section II

Relationship between public and private corporate investment

In many developing economies including India, the public sector has traditionally occupied a predominant role in the economy. The relationship between public and private corporate investment has been described as competitive and also complementary. It has often been stressed that public expenditure financed through public borrowing, taxes etc. crowds out private investment. The mechanism of crowding out is expected to work through preemption of financial and real resources, whereby, borrowing by the government to finance public expenditure raises the real rate of interest leading to a scarcity of investible resources for the private sector. Blejer and Khan (1984) however point out that to the extent public expenditure is in infrastructure, it could be complementary to private investment. This could be true, because public expenditure in infrastructure such as power, railways etc. can enhance the possibility, as also the profitability of private investment and raise the demand for ancillary services. It could thus provide a demand and supply side stimulus to private investment.

In examining these seemingly opposite views of the effect of public investment on private investment it is desirable to keep certain ground realities in view. Firstly, the manner of functioning of financial markets and the link between the command over financial resources vis-a-vis real resources is important. The crowding out effect gets moderated to the extent that the pattern of savings in the economy (especially that of the households) moves in favor of financial assets. The composition of savings in India has over the

years shifted in favor of financial assets. Even if we ignore that interest rates in India and the financial sector in general were subject to controls, the increase in the financial resources raised through the capital markets during the eighties gives an indication that the private sector, on the aggregate, did not face a shortage of investible resources. Therefore, the argument that where prices are administratively controlled, it is quantity that gets rationed is not entirely valid as far as the market for long term investible funds are concerned in India during the eighties. Blejer and Khan [1] in their study note that:

> ".. one of the principal constraints on investments in developing countries is the quantity, rather than the cost, of financial resources . . . it would be legitimate to hypothesize that the private investor in a developing country is restricted by the level of bank financing."

At the same time they concede that this assumption/statement

> "...may be some what restrictive for those developing countries in which firms can issue shares and obtain equity financing."

Secondly, crowding out through the bidding away of real resources could also occur especially if both public and private sector were competing for the same type of capital goods, raw materials etc. the supply of which in the short run could be inelastic. This could happen if public investment is in activities that are in direct competition with the private sector (Reinhart and Khan 1990). The crowding out effect has to pass through the financial market and

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[1] Blejer, Mario J and Khan Moshin S 'Government Policy and Private investment', IMF staff Papers, June 1984, pp 386.

then move to the real sector. To what extent this happened in India is an empirical question.

The Complementarity hypothesis: To the extent that public investment is concentrated in areas that raise the potential output of the economy, it could on the other hand increase the profitability of private investment. The crowding in impact in this sense takes effect through improvements in the infrastructure and the overall investment climate, and this effect may be staggered. However, 'crowding in' could also occur in a shorter time frame if public investment leads to more orders for the output of the private corporate sector implying thereby, a relaxation of the demand constraint.

Thus, the route of causation of the so called 'crowding out' effect and 'crowding in' effect are quite different. Therefore, the net result has to be seen in terms of the structure of the economy under consideration and the pattern of output and investment. It can be said that the crowding out effect can become significant only if the financial markets (inclusive of both debt and equity markets) are so narrow that the private sector finds it difficult to raise additional financial resources with an increase in public investment. Or, that the pattern of investment by the public sector is directly competitive to that of the private sector. Barring some exceptions, neither of the two factors could be considered to have been of significance in the Indian case during the eighties.

However, to arrive at a meaningful conclusion on the issue of 'crowding out', on an empirical basis, it is necessary to consider

not only the composition of public and private investment but also, the manner of financing and phasing of public expenditure which is a task beyond the scope of this study.

Blejer and Khan (1984) apply a variant of the flexible accelerator model in which they have incorporated some structural and institutional characteristics of developing countries. Their study is based on pooled data for a cross section of 24 countries for the period 1971-1979. Though it does not include India, the study is interesting from a methodological point of view. We discuss here only the reduced form of their model.

In order to explain changes in private investment, Blejer and Khan (1984) include the trend level of public investment (TGIR) as one explanatory variable. The difference of the actual level of public investment from its trend value has been taken as another explanatory variable. This is justified by the authors as follows. They note, that it is ideally necessary to draw a distinction between the infrastructure component of public investment and public investment in non-infrastructure related activities. This enables separating out the crowding out from the crowding in effects. In the absence of functional distinctions in the available data, they have used the above two variants of public investment as proxies. The central assumption is that investment in infrastructure is an ongoing process and has a longer gestation lag. Such investment cannot be rapidly adjusted and is thus represented by the trend value, TGIR.

In contrast, other investment spending of the government can be adjusted with greater speed and is represented by deviations of public spending from its trend value. They have experimented with other specifications which are however based on these basic assumptions.

They conclude, that public investment, as proxied by the long term trend level of public investment, is complementary to private investment whereas, other kinds of investment tend to be substitutes. As the units of measurement of the variables were different the authors further tried an alternate way of determining the relative influence of different variables by calculating the relevant beta coefficients. Since the variables are measured in standard deviation terms, beta coefficients are independent of units.

Being an exploratory attempt, we have used a very simple specification for studying this relationship in the Indian context. Our interest is to examine mainly the responsiveness of private corporate investment to changes in public investment. A double log specification is used for explaining gross fixed capital formation in the private corporate sector in terms of public investment. This is because, it is the responsiveness of private investment to changes in public investment that is of interest, rather than, the relationship between absolute values.

The parameter in a double log function signifies elasticity which is relevant in the present context. Since the estimates of the parameters are arrived on the basis of long term trends, and at

the same time represent a ratio of proportionate changes, these can be taken to represent the net effect of public investment on private investment. The larger the values, the greater is the extent of complementarity.

The specification is as under: -

i) Lnpvgf = a + blnpbgf + clnpvgf(-1) + u
ii) Lnpvmc = a + blnpbgf + clnpvgf(-1) + u

Lnpvgf = Log of Gross fixed capital formation in the private sector; Lnpvgf(-1) is its lagged value.
Lnpbgf = Log of Gross fixed capital formation in the public sector.
lnpvmc = Log of Gross private corporate investment in plant and machinery.

The dependent variable namely, gross fixed capital formation in the private sector, and the independent variable ie. , gross fixed capital formation in the public sector, relate to the same period. From a conceptual point of view, investment by the public sector during the current period gives rise to both demand and supply side expectations based on which, private investment decisions are made. The extent of variation with respect to the trend value is relatively less in the case of public investment as compared to that of private investment. As these relationships are expected to be giving us long term elasticities, the values of the estimates as also their significance do not change very much even if, lagged values of public investment are taken instead.

It may be noticed that we have included the lagged value of private fixed investment as the second explanatory variable. Panchamukhi (1986) has studied the complementarity of public investment with private investment using the flexible accelerator model, where he specifies private fixed investment as a function of public investment and lagged values of private fixed investment. He interprets the coefficients as indicative of the speed of response. However, the coefficients in our specification represent elasticities. Further, the structural models of Blejer and Khan (1984), Ramirez (1994) based on the flexible accelerator model, incorporate changes in the GDP, real interest rates and other variables.

In our specification the lagged value of private investment is expected to capture the effect of these excluded variables. The relevant parameter represents the extent to which private investment decisions are influenced by its own past momentum (of private investment) rather than by changes in public investment. Table 2.5 shows the results for specification No. (ii) relating to investment in plant and machinery. The results for specification (i) are similar and lead to identical conclusions and are, therefore, presented under Annexure I to this chapter for reference.

Table 2.5

Relationship between public and private investment in plant and machinery

Period	Independent Variables c	LnPbGf	Lnpvgf(-1)	R^2	$\bar{R}^2$	DW
1) 1951-90	-1.18 (-1.71)	0.42 (2.62)*	0.64 (4.29)*	0.85	-	1.95
2) 1951-64	-0.69 (0.41)	0.73 (2.34)**	0.23 (0.83)	0.66	-	2.37
3) 1965-74	-6.75 (-1.42)	1.58 (2.39)**	-0.10 (-0.33)	0.50	-	2.06
4a) 1975-90	-4.74 (-1.16)	0.83 (1.3)	0.6 (2.09)***	0.83	0.81	1.89
4b) 1977-90	-4.34 (-0.85)	0.78 (1.04)	0.62 (2.13)***	0.85	0.83	1.48
4c) 1979-90	-0.32 (-0.08)	0.37 (0.68)	0.62 (2.9)**	0.87	0.84	1.68

Figures in brackets are t values.
*/**/*** Statistically significant at 1%, 5%, 10% respectively

The results show that from 1951 to 1990, public investment as also the lagged values of private investment were significant in determining the change in gross private investment in plant and equipment (see Equation 1). Period-wise estimation reveals that changes in public investment had a significant effect on private investment up to 1975. The situation however underwent a change during the period 1975-90 (equation 2, 3 & 4a). First, the link between public and private investment appears to be weaker during this period. For the period 1975 to 1990, the estimate of the parameter relating to public investment is not statistically significant at 10 percent level of significance (equation 4a to 4c).

Secondly, it seems that gross fixed investment as also investment in plant and machinery of the private corporate sector were more influenced by the momentum of past investment decisions of the private corporate sector itself, rather than by expectations about the possible supply or demand side effects of public investment.

The aforesaid conclusion derives from the change in sign as also the 't' value of the estimates showing the influence of the lagged values of private gross fixed investment which is the other independent variable. The results therefore suggest gradual weakening in the complementarity between investment in the two sectors during 1975 to 1990.

However, as already noted, complementarity is more a consequence of the pattern of investment rather than the sheer quantum of investment. In order to get a clearer picture a detailed analysis at a disaggregate level is called for, which is not possible given the limited scope of this study. However, our observations are corroborated to some extent, when we analyze the change in the composition and the growth rates of capital formation in the public sector for different sectors.

The composition of gross capital formation by the public sector is given in Table 2.6 which reveals that there was a significant increase in the share of capital formation in electricity, gas and water supply, mining and quarrying and the communications sectors during the period 1975-76 to 1990-91 On the other hand, the shares of agriculture, manufacturing, transport etc. in gross capital formation in the public sector diminished during that period.

Table 2.6

Composition of gross capital formation in the public sector.

(percent)

Sectors	1975-76	1979-80	1984-85	1987-88	1990-91
Agriculture	9.8	14.2	10.4	8.8	6.4
Mining & Quar	7.0	6.8	12.1	13.8	12.9
Manufacture	18.5	23.2	18.1	17.1	15.3
Elec.Gas Water	18.5	21.3	21.6	31.3	25.7
Construction	0.9	1.1	1.0	0.7	0.6
Trade, Hotels	16.1	1.5	4.4	-7.9	4.1
Transport	12.8	10.1	9.9	9.0	8.8
Communication	2.5	2.5	3.4	4.4	5.4
Banks & Insur.	0.5	0.6	1.1	3.2	3.7
Real Estate	1.1	1.5	1.0	1.6	1.4
Services	12.3	17.2	17.0	18.0	15.7

Source : Same as Table 2.1

The sectoral growth rates in gross capital formation in the public sector for the period 1975-1990 presented in Table 2.7 also leads to the same conclusion. It is observed that the growth of capital formation in agriculture was negative during this period. It is in this context that decline in the share of the construction component of gross capital formation in the public sector during the period 1975-1990 becomes relevant.

Table 2.7

Sectoral growth rates in public investment

(percent)

Sectors	1960-74	1975-90
Agriculture	3.16	-0.25
Mining & Quarrying	5.89	10.90
Manufacturing	4.82	2.99
Elec/Gas/Water	5.00	7.50
Transport	-0.55	3.09
Construction	8.09	-8.80
Communications	7.07	10.34
Banking and Insurance	11.89	21.31
Real Estate	0.70	5.60
Services (incl Admn)	3.20	5.78

Growth rates are exponential.
Source : Same as Table 2.1

Kelkar and Kumar (1990) point out (although in a different context) that financing of the energy sector was to a substantial measure through bilateral funding of projects during the eighties, implying thereby, greater dependence on imported capital goods. If this is true, it is likely that increase in public investment in plant and equipment in areas such as electricity, gas and mining, during this period, may not have, added to the complementarity between the pattern of public and private investment, at least in the short run. It is also possible that the poor liquidity position of a large number of enterprises engaged in generation and distribution of electricity may have also contributed to this dissociation. No doubt, additions to capacity in energy and mining sectors would have enabled in the long run new investment by the private sector. But, such effects would have been staggered.

At the same time, this dissociation could have also been on account of private sector investments moving into areas which were less dependent on the public sector, or into areas where the public sector itself was hitherto dominant. The visible growth of the private sector in areas such as consumer durables, chemicals and intermediates, services etc. and greater vertical integration especially in the chemical industry may have also contributed to the weakening of the complementarity. The pattern of diversification of the private corporate sector into these areas followed from the changes in the industrial policy during the eighties that consciously aimed at giving greater room to the private sector.

The foregoing observations need further investigation at a greater level of disaggregation not only for the public sector but also with regard to the pattern of investment by the private corporate sector across different industries keeping in view the inter-industry linkages. Given the limited scope of our study this however is not possible.

Conclusions: Based on the data and analysis in this chapter it can be concluded that the public sector continued to be predominant to the end of the eighties, in terms of its share in gross capital formation in the country. However, the relative importance of the private corporate sector grew, especially, during the period 1975 to 1990. The revival of growth in capital formation from 1975-76 (after a period of stagnation) was predominant in the private corporate sector relative to the public sector. The share of the construction component in the gross fixed capital formation in the public sector has been declining over the decades as compared to its investment in plant and machinery. This trend generally continued between 1975 and 1990.

Our analysis in this chapter shows that public investment has had a major influence on the growth of private corporate investment through the entire period starting from 1950 to 1991. However the complementarity between public and private investment appears to have weakened from the late seventies onwards, and more particularly, during the eighties. The most plausible reason appears to be the changes that occurred in the composition of both public and private investment during this period. In particular, there is evidence to show that public investment stagnated or

declined in certain crucial areas such as manufacturing, transport, agriculture etc. On the other hand a large proportion of public investment during the post 1975 period was concentrated into energy, mining and quarrying and communications. The highly import dependent pattern of investment in these sectors could have meant a weakening of direct interlinkages not only within public sector units themselves that were manufacturing capital goods. This could have also led to a decline in direct orders to the private sector units as well. However, this is a point, which need further investigation at a disaggregate level.

In light of the rapid growth in private corporate investment during the post 1975 period, it would be interesting to examine the pattern and composition of its investment in further detail. That would be the focus of the next chapter.

Annexure 1

Relationship between gross capital formation in the private corporate sector and capital formation in the public sector.

Regression results

Period	Independent Variables c	LnPbGf	Lnpvgf(-1)	R^2	DW
1) 1951-90	-0.67	0.42 *	0.6*		
	(0.19)	(2.91)	(4.54)	0.87	1.97
2) 1951-64	-1.11	0.79 **	0.25		
	(-0.75)	(2.85)	(1.05)	0.74	2.35
3) 1964-75	-3.68	1.14 ***	-0.13		
	(-0.91)	(2.02)	(0.49)	0.50	2.11
4) 1975-90	-3.81	0.76	0.59***		
	(-0.96)	(1.23)	(2.08)	0.82	1.87

Figures in brackets are 't' values

* /** /***: Significant at 1%, 5% and 10% respectively.

Chapter III

PATTERN AND COMPOSITION

The trends in capital formation examined in the previous chapter revealed that there was a strong revival in private corporate investment during the period 1975 to 1990. In light of this finding, we examine and explain changes in the pattern and composition of private corporate investment in this chapter. Capital formation in the economy is through the process of investment in physical assets. However, an individual firm or a company may also deploy its funds in a variety of assets, which may include financial assets as well. This chapter shows that the pattern of deployment of funds by the private corporate sector could have a bearing on various aspects of functioning of the real economy. Section I of the chapter will be devoted to examining the composition of assets and the growth pattern of fixed investment in the private corporate sector during the period 1975 to 1990. The factors underlying the changes in the pattern and composition of investment will then be examined in section II. Finally, the possible effects of the changes in the composition of investment by the private corporate sector will be explored in section III.

For analyzing investment by the private corporate sector, we rely of the data published by the Reserve Bank of India (RBI). Combined financial accounts (balance Sheet, income and expenditure statement and the sources and uses statement) for non government non financial public limited companies in the private corporate sector are prepared by the RBI on the basis of sample surveys carried out

by them. For examining relative movements of various aggregates vis-a-vis one another, it is necessary to take into account the growth process of the relevant aggregates over time.

The main difficulty in using RBI data is the lack of a continuous time series. The size of the sample in terms of the number of companies has been changing over the years. At the same time, it is the only official source, which has been consistently bringing out combined financial data right from the fifties. Alternate approaches to resolving this problem, including the one adopted by us, have been discussed in Appendix I and will, therefore, not be repeated here. In brief, for examining growth and movement of different variables over time, we have developed a method for computing value indices, the details of which may be seen in Appendix I. In addition some simple financial ratios and percentages have also been used.

Section I

Composition and pattern of investment: An examination of the composition of assets and changes in the same can provide some insights into the pattern of investment as well. Table 3.1 shows the composition of gross fixed assets (GFA) for non government, non financial public limited companies. The relative proportions do convey that the share of 'capital works in progress' increased from about 2.8 percent of the gross fixed assets in 1975-76 to about 7.6 percent in 1990-91.

Table 3.1

Composition of gross fixed assets (GFA)
(percent)

YEAR	Plant & M/c	Land Bldg.	Capital Works	Others	Total
1975-76	73.5	16.8	2.7	7.0	100
1979-80	74.3	15.3	3.9	6.5	100
1983-84	73.2	14.8	6.3	5.7	100
1984-85	73.5	16.1	5.1	5.3	100
1988-89	71.4	17.2	6.3	5.1	100
1989-90	72.6	16.4	6.0	5.0	100
1990-91	71.3	16.1	7.6	5.0	100

Source : Computed from 'Finances of Public Limited Companies', RBI Bulletin, several issues.

Given the policy framework during the eighties, whereby, the private sector and in particular, large industrial groups were given greater liberty to diversify and expand existing capacities to a minimum economic size, it is quite likely that investment in diversification and expansion may have dominated over investment in modernization of existing plant and equipment. This in turn may be the reason for the increase in the share of 'capital works in progress' in the gross fixed assets. The table also shows that the share of plant and machinery declined marginally, from about 73.5 percent in 1975-76 to about 71.5 percent of the gross fixed assets in 1990-91.

In order to get a picture of the relative importance of assets of different types in relation to fixed assets, it is necessary to consider the composition of Net Total Assets. Table 3.2 shows the relative share of various types of assets in the net total assets held by the private corporate sector. An interesting point to note

is that although financial assets [1] continued to constitute a relatively small proportion of net total assets, there was a general increase in its share from mid eighties onwards. Subsequent analysis in this chapter will show that even the modest increase in the share of financial assets, from about 2 percent of the net total assets in 1975-76 to about 5.5 percent in 1989-90, can be considered to be a significant change. Apart from other related issues that will be examined in further detail, this increase in the share of financial assets, is indicative of a new trend in corporate investment behavior in India. Table 3.2 also shows that the share of net fixed assets in net total assets increased by over 6% during this period.

Table 3.2

Composition of net total assets

Year	Net Fix.Assets	Inventory	Financial Assets	Others	Total
1975-76	35.2	35.2	2.0	27.6	100
1979-80	35.3	35.4	2.0	27.3	100
1983-84	42.9	25.8	1.7	29.6	100
1985-86	45.7	23.4	2.6	28.3	100
1988-89	43.5	24.4	3.8	28.3	100
1989-90	40.8	24.3	5.5	29.4	100
1990-91	41.3	24.3	5.1	29.3	100

Source : Same as Table 3.1

[1] Financial assets/ investments include Foreign and Indian securities. Indian securities comprise of Government / Semi government securities, Industrial securities, Shares and debentures of subsidiaries and Others. It excludes, Loans and advances and other debtor balances, loans to subsidiaries, cash and bank balances, fixed deposits with banks etc. The words 'assets' and 'investments' will be used to denote stocks and flows respectively.

The movement in the stock of financial assets as compared to fixed assets is very starkly depicted by Figure 3.1 which shows the indices of Gross fixed assets and financial assets. This figure shows that the holding of the two assets moved very closely till about 1984-85 and suddenly diverged thereafter. The data for this graph is from the combined balance sheets. Given the increase in stock prices, witnessed through the eighties, this increase in the share (as well as stock) of financial assets assumes importance and will be examined in greater detail.

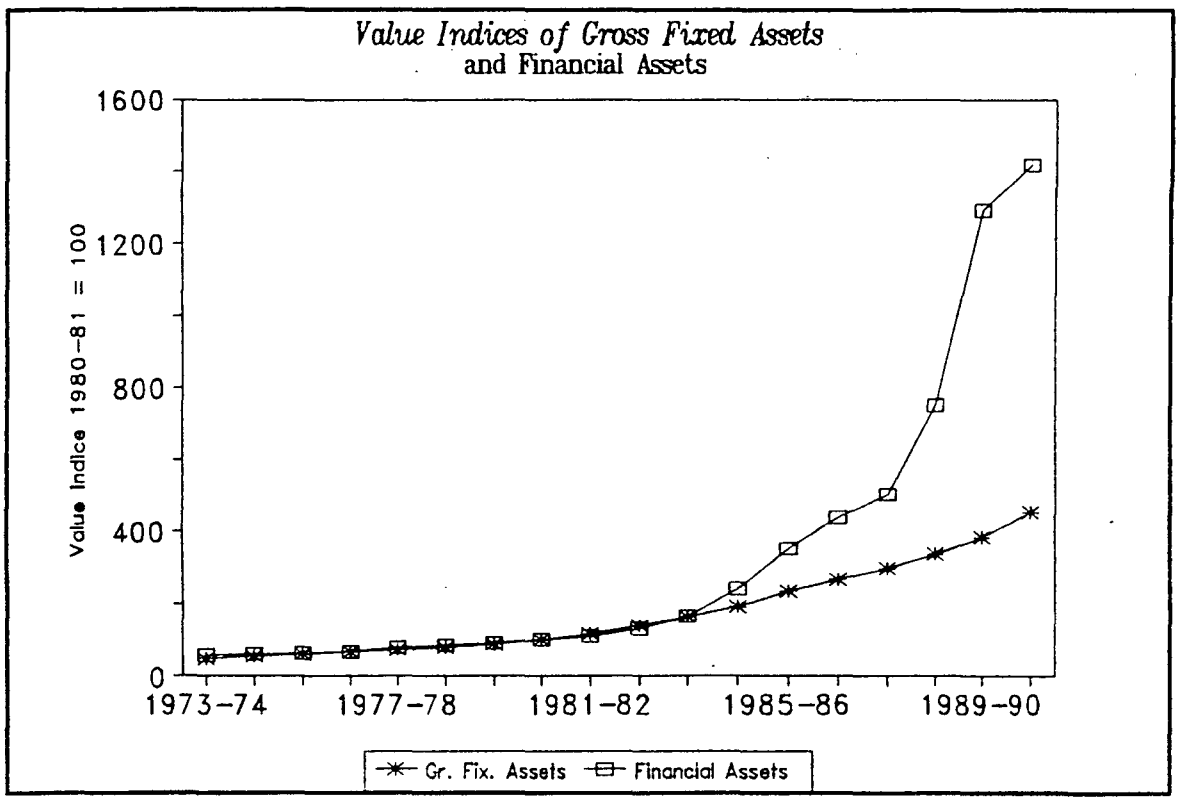

Figure 3.1

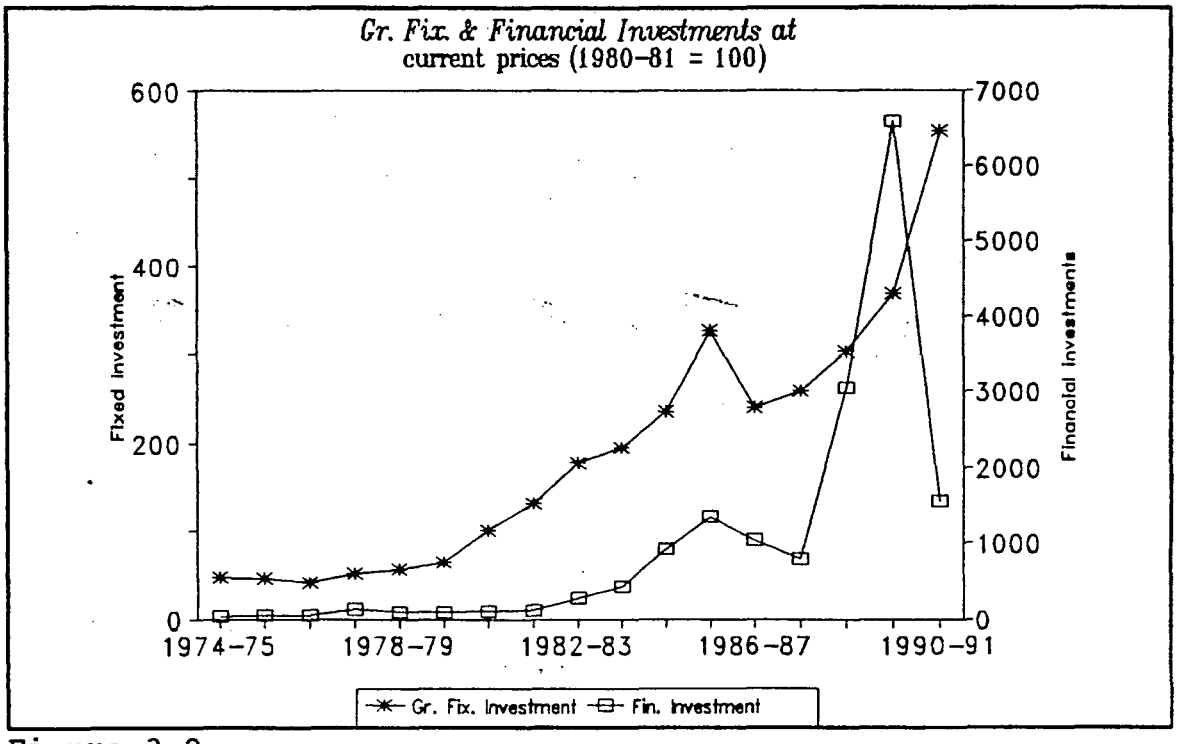

Figure 3.2

Figure 3.2 shows the value indices of Gross fixed investment and indices of financial investment. (Financial investments are plotted on right side secondary axis). Unlike figure 3.1 that showed the stock position regarding fixed and financial assets, this graph shows the flows, ie. value indices (at current prices) of the investment made each year.

It is seen that fixed investment maintained a steady upward trend, barring a surge in 1985-86 and this pattern was replicated by financial investment. Starting from mid eighties there was a surge in financial investments by the corporate sector as a whole although with fluctuations. Between 1987-88 and 1989-90 financial investments increased six fold. In 1990-91, financial investments declined sharply whereas fixed investment showed an increase. The indices plotted in figure 3.2 have also been shown in Table 3.3 for reference.

Table 3.3

Value indices fixed and financial investment
(Indices at current prices 1980-81 =100)

Year	Investment		
	Gr.Fixed	Plant & Mch	Financial
1974-75	46	54	37
1975-76	46	53	51
1976-77	40	43	53
1977-78	51	56	127
1978-79	56	64	93
1979-80	64	72	81
1980-81	100	100	100
1981-82	130	127	110
1982-83	177	190	270
1983-84	195	213	422
1984-85	235	252	916
1985-86	327	315	1347
1986-87	239	262	1041
1987-88	258	254	779
1988-89	303	299	3045
1989-90	368	439	6571
1990-91	553	520	1556

Source: Same as Table 3.1

Unlike data derived from the combined balance sheets that give the position at a given point of time, the sources and use of funds statement shows the deployment of funds through the year. The deployment of funds into different uses expressed as a share of total use of funds is presented in Table 3.4. This table shows that from the mid eighties, there was an increase in the share of funds deployed for financial investments. From a virtually insignificant proportion in the beginning of eighties, financial investments accounted for over 12 percent of the total use of funds by 1989-90.

Table 3.4

Use of funds by the private corporate sector

Year	Gross Fix.Asset	Inventory	Financial Investment	Others	Total
1981-82	45.59	29.05	0.70	24.66	100.00
1982-83	57.20	16.50	1.68	24.62	100.00
1983-84	61.53	5.08	2.82	30.57	100.00
1984-85	55.23	14.95	5.01	24.81	100.00
1985-86	43.52	22.91	5.38	28.19	100.00
1986-87	52.65	15.01	3.53	28.81	100.00
1987-88	60.80	15.04	3.25	20.91	100.00
1988-89	40.98	24.43	7.39	27.20	100.00
1989-90	37.75	19.87	12.32	30.06	100.00
1990-91	50.86	21.30	2.67	25.17	100.00

Source : Same as Table 3.1

As already mentioned, during the eighties a series of policy changes especially towards the private corporate sector engaged in manufacturing activities were introduced. The most important change was to allow greater scope for expansion and diversification through the introduction of schemes such as rendorsement of capacity, prescription of minimum economic size for industrial units and broadbanding of industrial licenses. With greater freedom to diversify and to expand, the private corporate sector also required higher volume of external finance. Table 3.5 shows capital raised through new issues (equity and debentures) and the stock price index and the respective annual average growth rates for the period 1975-76 to 1990-91. From this table it seems that from about 1984 onwards there was an increase in the total volume of funds raised from the capital market by private corporate sector. This was also accompanied by a continued boom in the stock markets which is indicated by the rise in the All India index of industrial securities.

Table 3.5

New Issues of capital and the stock price index

Years (1)	Amount Rs.Crs (2)	Growth % (3)	SPI * (4)	Growth % (5)
1975-76	92	-	61	-
1976-77	94	2.17	65	6.78
1977-78	176	87.23	67	3.37
1978-79	162	-7.95	82	21.42
1979-80	476	193.83	90	9.82
1980-81	647	35.92	100	11.52
1981-82	770	19.01	119	18.90
1982-83	704	-8.57	110	-7.15
1983-84	836	18.75	125	13.50
1984-85	1056	26.32	136	8.54
1985-86	1741	64.87	222	63.01
1986-87	2563	47.21	231	4.01
1987-88	1770	-30.94	207	-10.10
1988-89	3169	79.04	248	19.39
1989-90	6465	104.01	359	45.21
1990-91	4217	-34.77	500	39.20

*SPI Index of Industrial Securities 1980-81 =100
Source: Computed from The Report on Currency and Finance, RBI, Parts I & II, Several issues.

The analysis so far seems to suggest that the growth in capital markets may have had an influence on the rate of fixed investments as well as on financial investments. However, it is also known that external funds through the capital markets route were mostly accessed by large companies. The policy changes during the eighties were also accompanied by an enhancement of the asset limit for the erstwhile MRTP [1] companies from Rs.20 crores to Rs.100 crores in 1984. In Table 3.6 data on stock of financial assets expressed as a percentage of net total assets for different size class of

[1] Refers to companies (along with inter-connected undertakings) whose Net total assets exceeded the limits prescribed under section 20 (a) of the Monopolies and Restrictive Trade Practices Act, 1969. They were also popularly known as large houses.

companies is presented. What is really striking is that the increase in the share of financial assets from the mid-eighties onwards occurred mainly in the largest two size classes, that is, in respect of companies with paid-up capital of more than Rs. 5 crores and Rs. 25 crores respectively.

Table 3.6

Financial investments as percent of net total assets by size class

Years -> Size class *	75/76	80/81	85/86	86/87	87/88	88/89	89/90	90/91
0.0-0.05	na	na	3.0	3.0	2.5	1.9	1.6	1.8
0.05-0.1	1.4	1.6	5.2	2.0	1.2	1.2	1.0	0.9
0.1-0.25	2.3	2.2	1.6	1.6	1.6	2.4	2.5	2.6
0.25-0.5	1.6	1.1	1.4	1.3	1.9	3.3	3.5	3.4
0.5- 1.0	1.7	1.6	1.2	1.4	1.2	2.8	2.5	2.1
1.0- 2.0	2.0	1.7	1.5	1.8	1.6	1.8	2.2	2.4
2.0- 5.0	2.7	1.8	2.3	2.9	2.9	2.7	2.9	3.2
5.0-10.0	1.8	2.0	2.5	2.7	2.4	3.3	3.4	4.1
10- 25.0	na	1.7	2.2	3.3	3.2	3.2	3.5	4.4
> 25....	na	1.6	4.3	3.4	4.5	5.8	10.4	8.7

* Note: Size Class is by Paid-up capital in Rs Crores.
Source : Same as Table 3.1.

Given the aforesaid background, it is essential to examine the pattern of growth in fixed investment before attempting to explore the possible reasons for the changes in the composition and pattern of investment by the private corporate sector.

Growth in fixed investment: When it comes to studying fixed investment, it is most appropriate to examine changes in net fixed assets. However, this is beset with problems. The main difficulty is that the figures of net fixed assets given in the combined financial accounts are determined on the basis of the rate of depreciation prescribed under the relevant 'Schedule' of the Companies Act 1956. However, these rates do not necessarily reflect

the economic life of assets. Further, one cannot rule out the effects of a change in the pattern of investment in favor of assets whose average rate of depreciation was relatively lower. Revaluation of assets can also influence the values of assets. The absence of reliable estimates of capital stock also makes the task of arriving at estimates of net fixed investment difficult.

One simple but crude way of getting an initial picture on the growth of fixed investment is to compare successive values of the ratio of net fixed assets to gross fixed assets. This ratio (computed from the combined balance sheet for successive years) has steadily moved up from 51 % in 1974-75 to 55% in 1980-81, 58% in 1985-86 to 62 % in 1990-91. This suggests that net investment in fixed assets went up during the period 1975 to 1990. At the very least, it implies that the rate of gross investment consistently exceeded the rate of depreciation. However, for reasons already cited, most studies (including the present one) relating to investment have concentrated on gross fixed investment (rather than net fixed investment). Gross fixed investment in this context is taken as being equal to the year to year change in gross fixed assets.

The growth rate of gross fixed investment in real terms has been arrived at by deflating the value index of gross fixed investment by an appropriate deflator.[1] A weighted average of the unit value index for import of capital goods (machinery & transport equipment) and the implicit deflator from the national account statistics for

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[1] The value index for gross fixed investment has been derived using the method of indices presented in Appendix I.

machinery and transport equipment has been used for arriving at a deflator.

The growth rate of gross fixed investment for the period 1975-1990 (in nominal and real terms) for non government non financial public limited companies covered in the RBI sample surveys is presented in Table 3.7. It is seen that gross fixed investment in the private corporate sector increased at a rate of 10.11 percent during 1975 to 1990. Investment in plant and equipment grew at 9.34 percent in real terms between 1975-1990.

Table 3.7

Rate of growth of gross fixed investment
(1975-1990) (%)

Growth rates	Gross Fix. Inv.	Plant and Machinery
Nominal	17.61	16.75
Real	10.11	9.34

* All growth rates are statistically significant at 5%

It may be recalled that on the basis of national accounts data we had estimated that the gross fixed capital formation by the private corporate sector grew in real terms by over 12.5 percent and that gross capital formation in plant and machinery grew by over 13 percent during the period 1975 to 1990 (ref chapter II, Table 2.4). In comparing the growth rates presented in Table 3.7 with corresponding figures based on the national accounts data, three points need to be borne in mind. First, the data sources are different. Second, national accounts data cover the entire private corporate sector which includes public limited companies, private limited companies and cooperatives. The above table pertains to only non government, non financial public limited companies. Third,

the deflators used are different in each case. It can nevertheless be said that in terms of broad magnitudes, the two are comparable (in real terms) and it also establishes the fact that investment showed a high growth rate during this period.

We had earlier noted that increase in the volume of funds raised from capital market sources, may have enabled higher volumes of fixed as well as financial investments. It is therefore, likely that the investment pattern may have been influenced or responsive to movements in stock prices. To examine this aspect the growth rates of fixed investment (indices at constant prices) and annual percentage changes in stock prices are presented in figure 3.3.

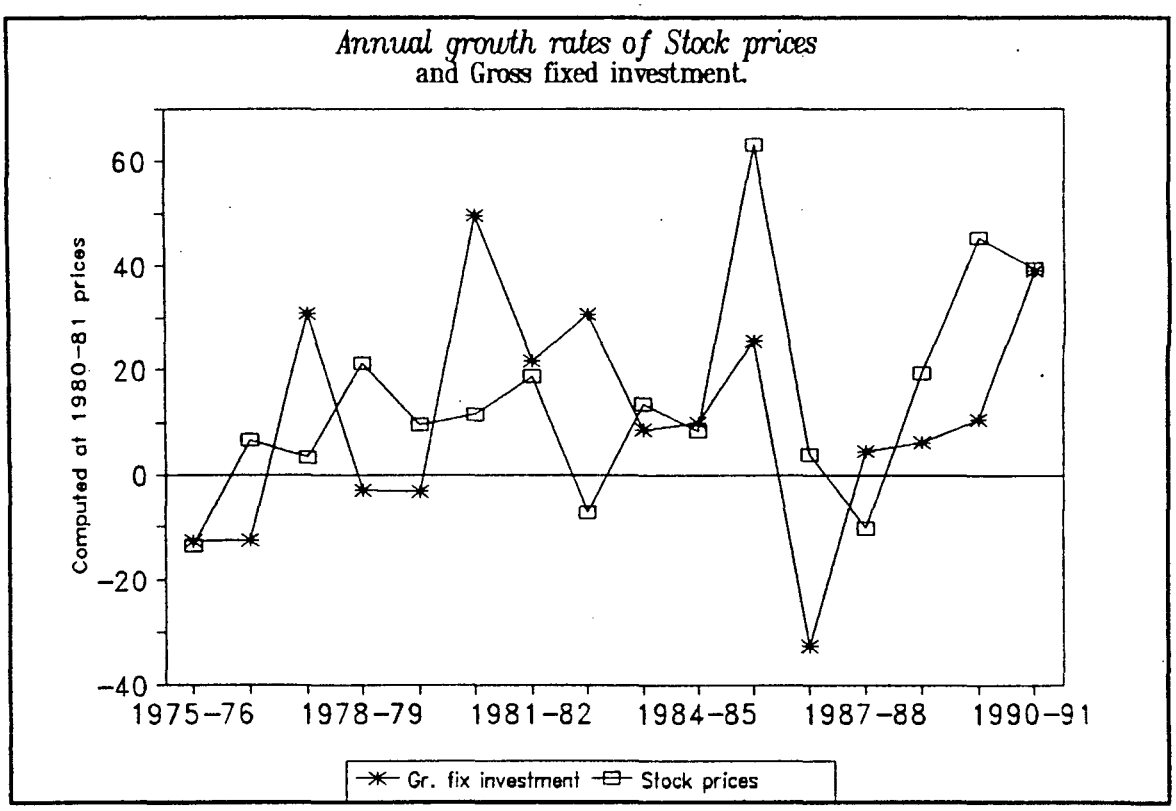

Figure 3.3

It can be seen that till 1983-84, the direction and timing of growth of gross fixed investment (at constant prices) and stock price index did not necessarily coincide. However, after 1983-84 there is greater synchronization between the growth in the stock market index and gross fixed investment. In fact, the graph reveals that after mid eighties (1983-84), changes in real investment have moved broadly in consonance with the direction of change in the stock prices. It seems that the relationship between gross fixed investment by the private corporate sector with stock prices has indeed undergone a change from the mid eighties.

While gross fixed investment in real terms seems to have grown at over 10 percent through the period 1975 to 1990, there is however an important qualification. When the trend is examined for breaks, we find a significant break (downward) after 1985. This conclusion is arrived at on the basis of the following regression which uses a dummy variable(d) for checking for a break in the trend (t). The dummy variable 'd' takes the value zero till 1985-86 and one thereafter (till 1990-91).

$$\underset{}{\text{LnGI} = 3.58} \quad + \underset{(12.5)}{0.15\ t} \quad - \underset{(-5.05)}{0.04\ dt} \qquad \begin{matrix} R^2 = 0.94 \\ DW = 1.43 \\ DF = 13 \end{matrix}$$

We need not elaborate on the significance of the timing of the downward shift in the trend rate of gross fixed investment, except to say that it corresponds with the period when additional financial resources found their way into financial investments. This is an interesting development, especially when viewed against

the earlier observation that from mid eighties real investment followed changes in stock prices more closely.

While the period after 1985-86 showed a lower growth in private corporate investment, in the last year of the decade (ie.1990-91), there was a very sharp increase in fixed investment (refer figure 3.3). A look at the imports of capital goods (not presented separately) by the private corporate sector also reveals that the last year of decade of eighties was characterized by sharp increase in import of capital goods.

In his study covering the fifties, A.K Bagchi [1] notes that:

> "....so long as the foreign exchange position was comfortable the controlling element in determining the volume of investment was the demand for investment and the level of private imports especially in capital goods reflected rather than determined the private sector investment. However, as soon as import controls came into operation, it was the level of private imports, particularly of capital goods which determined the level of investment."

He goes on to say that between 1956 and 1957, there was a quickening in the pace of investment (and imports) and it was widely anticipated that there would be a foreign exchange crisis and this led to a further acceleration in the pace of imports. Bagchi further notes that:

> "... the anticipation of a foreign exchange crisis by the private sector brought the crisis nearer."

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[1] Bagchi, A.K (1962), Investment by privately owned Joint Stock Companies, Arthanti, July 1962, pp 165 and 166.

While the eighties is characterized by a relaxation on the imports, especially capital goods, as also an increase in external commercial borrowing, however, by the end of the eighties the possibility of a serious balance of payments crisis became imminent. The spurt in import of capital goods by the private corporate sector was possibly on account of its attempt to import as much of capital goods as possible, before the doors got closed. The expectation of a sharp escalation in capital costs due to a possible devaluation may have also accentuated the process. Therefore, it seems that considerations relating to the external sector were also important in determining private corporate investment.

The foregoing analysis in this section shows that gross fixed investment by the private corporate sector grew at a rate of over 10 percent during the period 1975 to 1990. It appears that the measures for allowing greater freedom to the private corporate sector to expand capacities and to diversify did shape the pattern of fixed asset formation, in as much as, the share of 'capital works' in the gross fixed assets increased during the eighties. The eighties also witnessed a general increase in stock prices and an increase in the volume of funds raised through the capital market. Fresh capital issues by public limited companies were still subject to controls in the eighties. It is, therefore, likely that higher volumes of funds were raised from the capital markets by the private corporate sector with the stated purpose of undertaking expansion and diversification projects. However, from about the mid eighties onwards, there was an increase in share as also the level of financial investments by the private corporate sector. There is

evidence to show that the increase in financial investments was mainly accounted for by large companies. For this reason, it appears that the availability of external funds played an important role in supporting the increase in the level of financial investments. Interestingly the trend for the gross fixed investments by the private corporate sector shows a downward break around 1986.

Section II

This section addresses some issues arising from the changes in the composition and pattern of investment witnessed during the post-1975 period, especially during the eighties. The factors underlying the changes in the composition and the pattern of investment (particularly the shift in favor of financial assets) would be examined. This is relevant, because the policy changes during the eighties were supposed to have been specifically aimed at creating an environment conducive to real investment. This section will concentrate on the financial and real factors that may have shaped the aforesaid composition and pattern of investment. While examining the financial factors, the composition of the corporate portfolio of financial assets will also be studied at the aggregate level.

Relative profitability and other financial factors: In a recent study on corporate finance in the G7 countries Browne (1994) notes that there is clearly some correlation between the average yield differential on physical to financial investment and the changes in

the amount of funds devoted to the two assets. His observation is with reference to a group of industrialized countries. Nevertheless, it may be relevant to examine, whether, there was a differential between the yield on fixed and financial investment for the private corporate sector in India during eighties. In this context, it would also be interesting to examine the role of financial factors especially the structure of interest rates, in determining the composition of the corporate investment portfolio. The following paragraphs are devoted to analyzing these issues.

Relative Profitability of Financial assets: Investment as also current activities in any manufacturing concern are financed through internal and external sources of funds. There is often a gap between availability of funds and its actual deployment. With the increase in the volume of funds raised in the eighties, financial investments may have served as a way of managing the portfolio and the internal liquidity / cash flow in the most profitable manner. This behavior could have been influenced by the relative profitability of fixed compared with financial investment.

In order to examine the above point some of the profitability ratios for the private corporate sector are compared with the one period capital gains from holding of industrial securities in Table 3.8. Column 1 and column 2 of the Table 3.8 show gross profits (GP) as a percentage of sales and of net total assets (NTA) respectively. These are the gross profit margin and the asset utilization rates respectively. Column 3, shows operating profits as a percentage of net total assets and Column 4 show profit after

taxes as a percentage of net worth which gives us the return on net worth. Column 5 shows the one period average capital gains from holding of marketable securities (equity shares)[1].

Table 3.8

Selected profitability ratios and average rate of capital gains on industrial securities.

(percent)

Years	GP/sales (1)	GP/NTA (2)	OP/NTA (3)	PAT/NW (4)	Capital Gains (5)
1976-77	9.0	11.0	6.5	7.9	-1.1
1977-78	9.0	11.0	6.5	8.8	10.5
1978-79	9.5	11.7	7.5	11.6	11.5
1979-80	10.1	12.6	8.3	14.5	14.2
1980-81	9.6	12.0	7.3	14.1	13.5
1981-82	9.3	11.2	6.3	13.4	7.7
1982-83	8.7	9.7	4.6	10.5	8.4
1983-84	7.9	8.4	3.3	6.6	4.9
1984-85	8.3	8.7	3.7	7.7	28.3
1985-86	9.0	8.8	4.1	8.3	25.1
1986-87	8.5	8.0	2.9	5.7	18.9
1987-88	7.8	7.4	2.0	3.5	4.4
1988-89	9.1	8.8	3.4	8.3	18.1
1989-90	10.2	9.9	4.3	10.7	34.6
1990-91	11.2	10.7	5.2	13.5	46.5

GP: Gross profits, OP : Operating profits,
NTA : Net Total Assets : NW : Net Worth.
Source : columns 1,2,3,4 : Same as Table 3.1.
column 5 : Same as Table 3.5

[1] One period capital gains have been computed by taking a three year moving average (centered) of the annual growth rates of the Index numbers of Industrial securities (All India) published by the RBI.

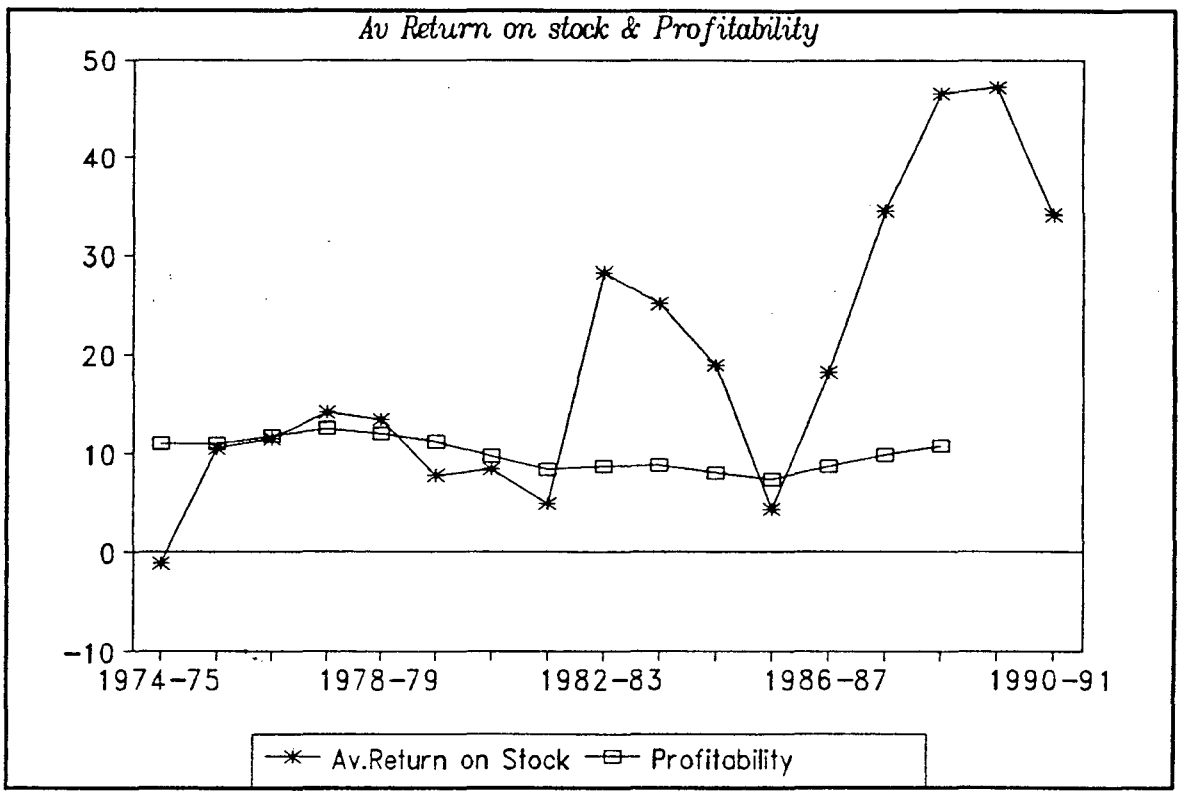

Figure 3.4

In Figure 3.4, we have plotted the return on net worth and the average one period return on stock (ie column 4 and 5 of Table 3.8) which bring out the relative movements in the two ratios.

From Table 3.8 as also figure 3.4, it is apparent that profitability as indicated through alternative measures stagnated during the eighties, while the possible capital gains on holding of stocks was far higher. Therefore, there was a strong incentive to the corporate sector to hold financial assets especially securities whose prices were linked to the movements in the stock markets.

While examining macro constraints on India's Economic growth in the late eighties Lance Taylor [1] notes that:

> " The obvious alternative forms of wealth are real estate and durable goods, with expected capital gains being the relevant rates of return. Such speculative assets dominate productive capital when profits on real investment are low and potential savings high."

Though we have not taken into account real estate and other such assets, the parallel in this context is obvious. This is in the light of the stagnant trend in corporate profits as compared to the increase in the returns on financial assets and the observed downward break in the trend rate of real fixed investment. This brings us to some other financial factors that could have further induced such tendencies.

The structure of interest rates in India has been an administered one. While, a detailed analysis of the financing pattern of the corporate sector is beyond the scope of this study, we recognize that the link between the composition and cost of funds with the relative rates of return on different financial instruments may have been important. The left side of the Table 3.9 (Columns 1 to 4) shows key interest rates which may have had a bearing on the cost of borrowed funds during the eighties. The right side of this table shows the rates on certain financial instruments (Other than shares) into which financial investments were channeled.

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[1] Taylor Lance (1988) : Macro Constraints on India's Economic Growth, Indian Economic Review, Vol. XXIII, No. 2 pp 161

Table 3.9

Changes in interest rates, returns on financial investments and premium collected on equity issues.
(percent)

	Relevant to cost of funds L					On financial investments R		
Years	FIs Rate (ICICI) (1)	Bank (2)	Debentures CD (3)	Debentures NCD (4)	Premium on Equity (5)	PSU Bonds (6)	Tax-Free PSU bonds (7)	UTI Div (8)
1980-81	14.0	19.4	13.5	13.5	*	*	*	11.50
1981-82	14.0	19.4	13.5	15.0	*	*	*	12.05
1982-83	14.0	19.5	13.5	15.0	*	*	*	13.05
1983-84	14.0	18.0	13.5	15.0	*	*	*	14.00
1984-85	14.0	18.0	13.5	15.0	*	*	*	14.25
1985-86	14.0	17.5	13.5	15.0	1.24	14.0	*	15.25
1986-87	14.0	17.5	13.5	15.0	3.51	14.0	10.0	16.00
1987-88	14.0	16.5	12.5	14.0	39.89	13.0	9.0	16.50
1988-89	14.0	16.0	12.5	14.0	10.66	13.0	9.0	18.00
1989-90	14.0	16.0	12.5	14.0	22.32	13.0	9.0	18.00
1990-91	14.5	16.0	12.5	14.0	9.66	13.0	9.0	19.50

FI : Financial institutions, CD/ NCD :Convertible/Non Convertible debentures , PSU : Public Sector , UTI: Unit trust of India. * Neg.
Source : Same as Table 3.5

Interest rates in nominal (and in real terms) were higher during the eighties as compared to the later half of the seventies. However, during the eighties, the cost of long term borrowed funds (in nominal terms), remained stable or declined (Ref Table 3.9 Columns 1 to 4). Real rates on borrowing, though positive, also did not increase during the eighties (not presented separately). The general increase in the statutory liquidity and the cash reserve ratios for the banks, made lending to the corporate sector an attractive proposition. In fact, indirect form of finance even by the commercial banks to the private corporate sector increased significantly from the mid eighties (Rajakumar Dennis,1993 pp 55). Financial institutions also found indirect financing of the

corporate sector through preferential allotment an attractive option to direct financing through term loans.

At the same time, there was an increase in the rate of return/ dividends accruing on certain other financial instruments that became a part of the corporate investment portfolio. In this context the costs associated with different sources of funds as compared with the return on different financial assets becomes important.

Towards the later half of the eighties, public sector companies and corporations started to raise large volumes of debt capital through the issue of bonds that offered attractive rates of interest or had certain tax benefits. While the coupon rate on these bonds was only 9 percent, the effective return was 18 percent, after considering the then prevailing average rate of corporate tax of 50 percent and the tax-free status of the bonds.

Apart from the prospect of making short term capital gains through direct speculation in industrial securities in the stock market, the changes that occurred in the rates of interest and dividends on financial instruments issued by institutions other than the private corporate sector also played an important role. The schemes of the UTI such as the US 64 proved to be an attractive investment (Economic Times Nov. 28 1994) for gathering dividend income that was relatively high along with tax benefits (refer column 8, Table 3.9)

Another, important change was the rise in the level of premium gathered by the corporate sector on new capital raised through the stock market route. The figures mentioned under col. 5 of Table 3.9 shows the amount of premium as a percentage of the total new issue of equity. Though, equity financing may have been a small proportion of the total use of funds, it appears to have played a significant role in bringing down the cost of external funds. It also enabled the corporate sector to recycle funds back to the stock market either directly or through the purchase of securities of non banking financial intermediaries.

The relative cost associated with different sources of funds got reflected in the composition of sources of funds. Table 3.10 shows that the capital market became a relatively more important source by the second half of the eighties. It accounted for approximately 19 percent of the total sources of funds between 1987-88 to 1988-89 as compared to about 8 percent in beginning of the eighties (Ref Table 3.10 rows 2a plus 2b).

Table 3.10
Sources of funds for the private corporate sector
(percentage shares)

Source of Funds	1981-82 1982-83	1983-84 1984-85	1985-86 1986-87	1987-88 1988-89	1989-90 1990-91
1) Internal Funds	29.69	39.46	32.08	32.29	32.75
2) External Funds	70.31	60.54	67.92	67.71	67.25
a. Paid up capital	1.83	4.14	3.01	11.97	7.88
b. Debentures *	6.06	10.11	13.36	7.81	10.66
c. Borrowing	32.70	25.75	25.07	28.09	27.00
d. Others	29.72	20.54	26.48	19.84	21.71

Includes privately placed debentures.
Source : Same as Table 3.1

All these developments created an opportunity for corporate entities to raise capital on the stock market through equity and

the debenture route and place the same in high yielding debt and stock market instruments and into other investments that were in some way linked to stock market returns. The composition of financial investments does lend credence to this view.

The aforesaid differential between different avenues of investment got reflected in the composition of the corporate financial portfolio as well. One would normally have expected the portfolio to have been dominated by marketable industrial securities. Though, this is true to some extent, data on the composition of financial assets as indicated in Table 3.11 and financial investments shown in Table 3.12 provide some interesting information. Table 3.11 shows that in terms of percentage shares, the proportion of industrial securities in the portfolio of the corporate securities gradually declined over the years. Similar is the story with regard to the proportion accounted for by securities of subsidiary companies.

Table 3.11
Composition of financial assets
held by the private corporate sector (percent)

Securities	1980-81 1981-82	1982-83 1983-84	1984-85 1985-86	1986-87 1987-88	1988-89 1990-91
Foreign	6.11	6.62	4.43	3.66	1.30
Govt/ Semi Govt	3.66	2.71	1.28	1.67	10.77
Industrial	50.63	45.06	27.31	36.44	28.54
Shares/Deb of Subs	30.27	27.94	18.94	12.25	9.96
Others	9.33	17.67	48.04	45.98	49.43
Total	100	100	100	100	100

Percentage shares of financial assets are based on their book / purchase values. Appreciation in the market prices of some of these assets is not taken into account.
Source : Same as Table 3.1

A major change in the corporate portfolio was the emergence of the 'others' category. The RBI data source from which these figures have been computed do not throw any light on the composition of this 'others' category. This is presumably because this category was not important before the mid eighties. However, a more recent study of the RBI[1] that presents the combined accounts of non financial, non government large public limited companies for the years 1991-92 has reclassified this others category as 'Securities of All India financial institutions'[2]. This category includes securities issued by the Unit trust of India apart from other financial institutions. It is known that the corporate sector has been a major investor in some of schemes of the UTI (such as the UTI 64 scheme) although the exact share of this particular security is not known through publicly available data sources. The point to note is that the UTI and other financial institutions in turn, have always held substantial proportions of marketable corporate securities and have been active participants in the securities market.

By the end of eighties we see that the private corporate sector portfolio started to include government and semi government securities as well. This category includes bonds issued by the Railways, and other public sector units apart from dated securities of the government. Some of these securities also carried certain

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[1] Finances of Large Public Limited Companies 1991-92, RBI Bulletin, September 1994, pp 1000.

[2] Financial Institutions include Industrial Development Bank of India (IDBI), Unit Trust of India (UTI), Industrial Credit and Investment Corporation of India (ICICI), Industrial Finance Corporation of India (IFCI), Life Insurance Corporation (LIC) and other state level financial corporations (SFCs)

tax benefits. Thus, it appears that the pattern of financing of the public sector had a bearing on the way private sector deployed its funds.

Table 3.12

Composition of investments
(Change in financial assets)

Securities	1980-81 1981-82	1982-83 1983-84	1984-85 1985-86	1986-87 1987-88	1988-89 1990-91
Foreign	14.59	5.94	1.29	1.20	-0.14
Govt/ Semi Govt	0.60	0.63	-0.28	3.73	20.63
Industrial	49.61	35.47	5.19	68.41	19.55
Shares/Deb of Subs	28.75	17.61	10.79	6.75	7.10
Others	6.45	40.34	83.01	19.91	52.85
Total	100	100	100	100	100

Source : Same as Table 3.1. (-ive sign indicates net disinvestment)

The year to year changes in the stock of different financial assets is given in Table 3.12. Unlike Table 3.11, Table 3.12 shows the composition of the fresh investment or disinvestment in different financial assets. It is seen that changes in the stock of industrial securities and financial assets in the 'others' category seem to fluctuate. Nevertheless, industrial securities and the 'others' category comprising mainly securities of financial institutions came to form over 75 percent of the additional investments made after about 1983. As already stated, financial institutions in turn have also been active participants in the stock markets. It is therefore likely that the changes in the total financial investment by the private corporate sector may have been closely linked to stock price movements.

To examine the pattern of growth of financial investments over time, the growth rates of financial investment and the stock price

index have been plotted in figure 3.5. It shows that increases in financial investments have preceded increases in the stock price index and so have the declines. This pattern of movement in the growth of financial investments is suggests a profit taking behavior of the corporate sector.

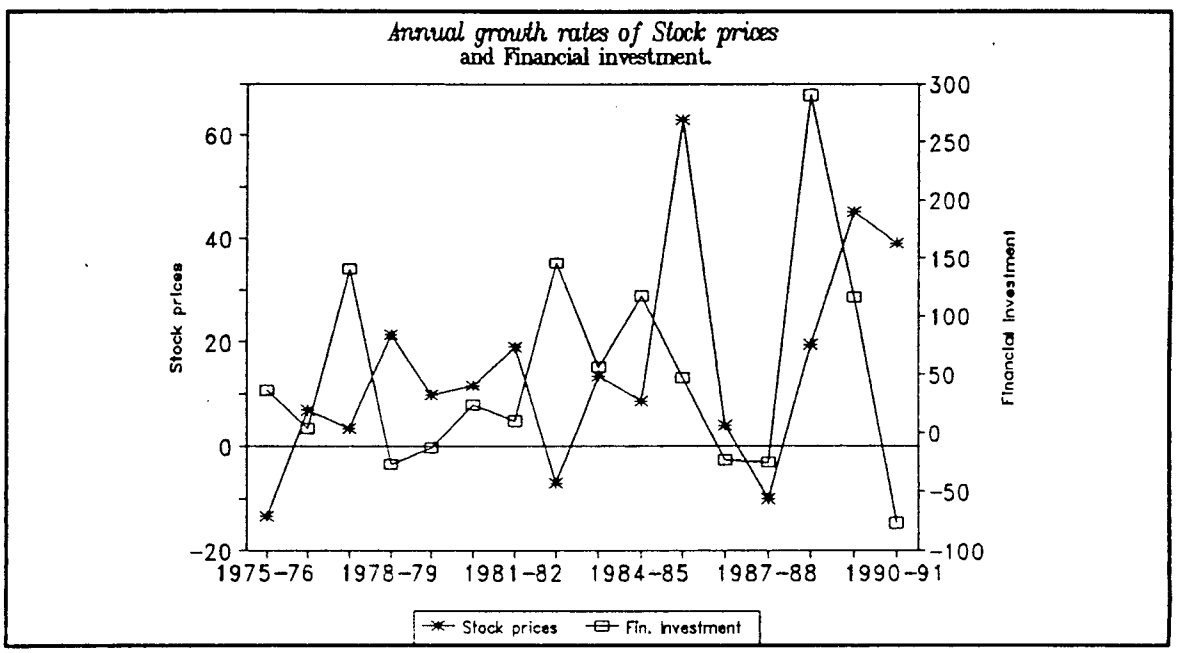

Figure 3.5

Since the corporate sector on the aggregate is itself a major holder of industrial securities, (and other securities closely linked to stock prices) such behavior may itself have influenced the movements of stock prices. Therefore, it may not be improper to conclude that the causation between stock prices and investment / disinvestment in financial assets by the corporate sector may run both ways. Although beyond the scope of this study, this issue needs to be investigated in greater detail.

We have so far examined the manner in which a differential between returns on fixed investment and financial investments, and may have induced a shift in favor of financial investments. The impact of financial factors on the composition of the sources of finance and the composition of the financial portfolio was also examined. However, it is also important to consider the role of real variables on the demand and supply side, which may have been instrumental in influencing the changes in the variables examined so far. In the following paragraphs we take a brief look at these aspects.

Demand side factors, investment lags and structural constraints:

Regarding demand side factors, some authors like Patnaik (1987 and 1988) have broadly argued that the growth (of output) in the industrial sector during the eighties was possible primarily on account of rise in real incomes of the middle income categories in the organized work force. Such a demand was then, not be expected to be sustainable, leading therefore, to stagnation in output levels in future.

If this was indeed true, then the aforesaid argument, could be logically extended to imply that expectations of stagnant demand may have encouraged entrepreneurs to prefer financial investments which were easily reversible rather than, committing their capital into ventures where the prospects of demand in the future were more uncertain. In the above sense, demand constraints may have played an important role in impeding the rapid utilization of financial capital into investment in productive assets. We are therefore, of

the view that the role of demand factors in determining investment needs detailed study though it is beyond the scope of this study.

The relative shift towards financial investment may have also been further influenced by the time-lag between the raising of resources from the market and the actual deployment in fixed investment. Whether this lag increased over time, or did firms face difficulties in executing the projects due to infrastructural constraints, availability of imported capital goods, foreign exchange etc. are questions that merit further investigation. While the import regime during the eighties was indeed relaxed, towards the end of decade, balance of payment difficulties became imminent.

In the context of demand and supply side bottlenecks the relationship between public and private fixed investment that we had discussed in chapter II again becomes relevant. The stagnant trend in public investment in general, barring selected areas, may have forced the private corporate sector to look for investment opportunities that were less dependent on the public sector.

Finally political uncertainties that gripped the country towards the end of the decade and the imminent balance of payments crisis may have added to the overall uncertainty about the future viability of new projects on hand. In section II of this chapter we had already noted that the growth performance of investment was somewhat weak in the second half of eighties as compared to the first half.

In the analysis through section I we have noted that investment in financial assets assumed importance from the mid eighties. It was also shown that the trend in real investment showed a downward break around 1986. This also coincides with the period when financial investments rose sharply. In section II we examined some of the real and financial factors underlying the change in the composition and pattern of investment especially during the second half of the eighties. We noted that these financial and real factors may have influenced the composition of the sources of financing and the composition of the corporate investment portfolio.

In light of the above findings, it is also likely that the aforesaid changes may have had an impact on the income side of the corporate sector. There is also a broader issue of the implications of the relative shift towards financial assets by corporate entities as a whole comprised mainly of non financial companies. Finally, it is important to see whether this shift in favor of financial investments in the late eighties was merely a passing phase or an indicator of the shape of things to come. The next section is devoted to examining these issues.

Section III

The effects of the aforesaid pattern of investment can be viewed from the perspective of the private corporate sector itself, and from the point of view of the economy in general. It was noted in the previous section that the relative returns on financial investments exceeded returns on investment in fixed assets. The differential between the yield on fixed to financial investments, as also the very increase in the (share and level) of financial investments seems to have had an effect on the composition of income of the private corporate sector as well.

As per the existing format in which combined balance sheets of the corporate sector is presented by the RBI, 'Total income' includes 'Sales' which is based of the core activity of the corporate entities. Next we have, 'Other income' which includes income from dividends, interest and rents. The third category is the 'non operating surplus and deficits'. Unlike the other two, this category includes capital gains or losses from the sale of assets and, therefore, has a direct impact on the asset side of balance sheet as well (it includes gains/losses on both fixed and financial assets). For an individual company this is essentially a non recurring item. That however, may not be true at the aggregate level with which we are concerned.

It is seen from Table 3.13, that 'other income' and 'non operating surplus / deficits' increased very sharply during the latter half of eighties as compared to sales of the private corporate sector.

Table 3.13

Value indices of total income, sales other income and non operating surplus and deficits (Current Prices)

Year	Total Income (1)	Sales (2)	Other Income (3)	NOSD (4)
1980-81	100	100	100	100
1981-82	120	119	111	129
1982-83	130	130	135	146
1983-84	139	140	174	159
1984-85	161	162	203	179
1985-86	185	185	239	145
1986-87	200	202	252	119
1987-88	220	222	285	232
1988-89	267	266	376	331
1989-90	326	325	481	354
1990-91	379	376	601	609

NOSD : Non-operating Surplus/Deficit
Source : Same as Table 3.1

Admittedly, 'other incomes' includes rent on real estate property and fixed assets. Similarly, non operating surplus and deficit also includes capital gains/losses from sale of land or other movable and immovable assets. However, the conclusions do not change even after these aspects are considered. Table 3.14 shows 'other incomes' and 'non operating surplus and deficits (NOSD) as a percentage of profits before taxes (PBT). The change in the ratios reinforces the conclusions that incomes and surpluses arising from outside the core production activities became very important during the eighties, in particular the later half.

Table 3.14

Non-operating surplus/deficits and other income expressed as a percentage of profits before taxes

Year	NOSD+OI / PBT	OI / PBT	% -> Year	NOSD+OI / PBT	OI / PBT
1975-1976	43.2	32.6	1983-1984	85.1	71.1
1976-1977	47.0	42.4	1984-1985	76.3	64.1
1977-1978	49.8	44.1	1985-1986	68.9	61.2
1978-1979	38.6	35.3	1986-1987	85.3	77.8
1979-1980	34.6	29.6	1987-1988	121.2	104.1
1980-1981	40.6	32.0	1988-1989	82.2	70.9
1981-1982	42.8	34.7	1989-1990	75.4	67.6
1982-1983	58.8	48.3	1990-1991	67.3	58.1

NOSD: Non-operating Surplus/Deficit; OI: Other Income
Source : Same as Table 3.1

Whether the increase in income from other sources led to a further increase in financial investment by corporate entities and caused a further increase in stock prices through feedback effects is difficult to determine in this limited study. However, the answer to this question is likely to be of importance from the point of view of the economy as a whole. The literature on the economic consequences of a relative shift towards financial assets by a single large segment of the economy like the private corporate sector is scanty and scattered. We have so far not come across any significant study on this issue with regard to India.

Some authors like Yukio Noguchi [1] have examined the phenomenon of what he has termed as 'Asset Price inflation.' We briefly recapitulate some findings and observations of his study that are relevant in the present context. According to the author, the

[1] Noguchi Yukio (1993), 'Asset Price Inflation and Economic Policies', Hitotsubashi Journal of Economics, 34, pp 111 to 146.

remarkable economic growth in Japan during the later half of the eighties was accompanied almost simultaneously by an increase in stock and land prices. The increases in asset prices was mainly caused by speculative bubbles. Macroeconomic policies (in particular, monetary relaxation) and flow of funds had an important effect in the growth of the bubble. Banks and financial institutions faced difficulties in finding takers for their funds. The unprecedented land speculation in the later part of eighties was supported by lending by financial institutions. Behind this lending was what he terms as the 'Zai-tech' activity of buisnessess raising low cost capital and using the proceeds to make bank deposits and buy other financial assets.

The policy of financial liberalization and deregulation meant increase in the rate of return of financial assets and this increased the incentive for businesses to undertake zai-tech. Despite the increased cost of borrowing, financial institutions did not raise interest rates, instead they tended to target lending to riskier borrowers. At the same time businesses rushed to channel funds into 'zai-tech' investment activities and the rise in corporate profits, pushed up stock prices further making it easier for companies to raise funds cheaply by issuing equity or equity linked bonds. He points to wealth effects on consumption as one important effect of an asset price inflation (although with regard to Japan he notes that such wealth effects may not have been significant).

Interestingly, Noguchi also concludes that even though increase in asset prices had a positive effect so far as consumption and investment is concerned, however, pointing to the negative aspects, the author notes that the bubble had the effect of distorting the allocation of resources. The increase in land prices shifted the pattern of investment in favor of corporations owning land. But for this, restructuring of heavy industries would have progressed earlier and new industries would have grown.

Some of the specifics as also the initial conditions are clearly different when compared to India. India was operating under a controlled interest rate regime. As opposed to the enormous current account surpluses, the Indian current account was increasingly on the deficit side and so on. Further, Noguchi has taken in to account investment in land prices as well which is outside the scope of this study. However, when it comes to the behavior of corporate entities, particularly with regard to undertaking financial investment, the parallel seems relevant. In this context it is pertinent to state that several of the erstwhile MRTP houses had set up as many as 25 investment and finance companies each under their control right through the eighties (Company News and Notes, July 1989). With their greater access to external funds through the capital markets, it was the large companies (though not necessarily the erstwhile MRTP houses) that were deploying increasing volume of funds back into the capital markets.

Given the serious income disparities in India and the fact that holding of financial assets especially marketable assets is skewed, it is quite likely that developments of the eighties may have led to net transfer of wealth in favor of the private corporate sector especially the larger companies. Analyzing the savings behavior in the Indian economy during the eighties, Shetty (1990) notes that the fiscal privileges on savings instruments seem to have tended to produced sizeable perverse wealth effects that seem to have contributed to the encouragement for conspicuous consumption. While his observation is for the economy as a whole, the trends that we have seen, could have meant a net increase in the wealth of the corporate sector due to holding of financial assets, the prices of which, have grown at a faster pace than other assets.

The analysis in this section has shown that the increase in the deployment of funds into financial investments during the eighties (especially the second half), was accompanied by a significant increase in income from such investments in relation to income from sales. It was also noted that this trend may have implications for the economy in general particularly in terms of distribution of wealth and incomes. In light of the economic reforms initiated from 1991, investment behavior of the corporate entities has become even more important.

Financial investments in the eighties, was it a passing phase?

The specifics of economic reforms introduced since 1991 are by now well known and will not be recounted here (Economic survey 1992-1993, Bhagwati and Srinivasan 1993). We do not intend discussing

the merits or the content of the economic reforms either. A more detailed analysis of the post 1990-91 period would necessarily have to consider the changes introduced in the external sector, especially those relating to exchange rates, foreign portfolio and direct investment, and the reforms relating to the financial sector apart from the crisis in the banking and stock market system that occurred in 1992. Our purpose here is to merely demonstrate that the tendency for 'treasury operations' to dominate has nevertheless carried on into the 90s and was not simply a passing phenomenon of limited significance.

The main difficulty in even examining the post nineties phase is the absence of data from official sources. Therefore, we have pieced together evidence available from other sources such as the publications of the Centre for Monitoring of the Indian Economy (CMIE) and The Economic Times etc. that have of late enhanced the coverage of the corporate sector in particular. While strict comparability with RBI data on which we have relied all through this chapter may be difficult, yet the CMIE data can give a clue on further developments. The data presented in the following tables (Tables 3.15 to 3.17) are based on a sample of 979 companies in the private corporate sector of which 750 are listed on the Bombay stock exchange (BSE). These 750 companies account for 67.4 % of the market capitalization on the BSE. When we look at the sources of finance as given in Table 3.15, we see very clearly that from a low share of 13 percent in 1990-91, capital market sources accounted for as much as 32 percent by 1992-93 and 46 percent by 1993-94 of the total sources of funds.

Table 3.15

Sources of funds for private corporate sector
(Percentage Shares)

Source	1990-91	1991-92	1992-93	1993-94
Retained Earnings	16.20	14.17	11.30	17.76
Depreciation	20.12	15.33	17.47	11.06
Capital Market	13.20	17.84	31.65	46.00
Institutional Debt	24.90	28.54	27.07	4.22
Current Liabilities	25.28	24.12	12.51	20.96

Source : CMIE, corporate Finance, Industry Aggregates, Nov.1994

We had earlier noted that in 1990-91, there was a decline in the use of funds towards financial assets by the corporate sector. By the end of the eighties, the composition of financial assets portfolio had also shifted in favor of securities of financial institutions and to some extent, in favor of government securities. The position regarding the use of funds from 1990-91 onwards is given in Table 3.16.

Table 3.16

Uses of funds by the private corporate sector
(Percentage Shares)

Use of funds	1990-91	1991-92	1992-93	1993-94
Gross Fixed Assets	50.92	53.50	54.00	49.19
Investments	3.56	2.13	2.69	18.82
Inventories	19.82	14.00	15.19	5.62
Receivables	23.13	25.91	24.15	21.43
Cash & Bank	3.13	3.54	3.78	3.12

Source: Same as Table 3.15

With the stock prices continuing to rise into the nineties, from 1990-91 onwards, we witness a further decline in the use of funds towards financial assets. During 1992, the contractionist monetary policy and liquidity problems in the stock markets may have been important factors in limiting fresh investment in financial assets.

But from 1993-94 onwards, we find financial investment have again assumed a very significant proportion of the total uses of funds.

While the deployment of funds into financial investment increased sharply only by 1993-94, 'other incomes' and 'non recurring income' (which we had earlier termed, non operating surplus and deficit) continued to grow faster than sales and total income suggesting a profit taking behavior. This becomes evident from the growth rates of different components of total income presented under Table 3.17.

Table 3.17
Growth rate of total income and its components for the private corporate sector (percent)

	1990-91	1991-92	1992-93	1993-94
Total income	18.80	20.32	14.02	17.83
Main income	18.54	20.37	13.25	15.87
Other income	27.82	26.94	23.93	18.24
Non rec. income	63.68	28.29	60.14	60.00

Non rec.income: Non recurring income
Source: same as Table 3.15

The fact that the share of other incomes in profits has been persistently on the high side right from 1991-92 has also attracted some attention. A report by the Merrill Lynch quoted in the Economic Times (Dec. 8/1994) also notes with concern the sustainability of such income and its growth compared to the companies core business.

The above data shows that there has been a distinct shift in favor of capital markets as a source of finance. Table 3.16 also shows that in 1993-94, financial investments by the private corporate sector again emerged to occupy a substantial share in the total use of funds. The continued growth of incomes from other sources does

give a clear indication that the tendency of the corporate sector to actively participate into financial investment was not just a passing phenomenon of the late eighties, but has continued into the 1990s.

While there seems to have been no systematic study or empirical evidence on the pattern of investment into fixed versus financial assets, the possibility that, speculative investments may have grown, has attracted attention. Some very divergent opinions have been expressed on this trend. Patnaik[1] notes that

> " the very profitability of speculation acts as a deterrent to all productive investment ie. , while we wait for 'liberalization' to produce its bonanza the economy actually retrogresses."

One may take a completely opposite view point in this matter. It can be argued that the combined financial statements do not take into account intercorporate transactions and therefore, aggregate analysis ignores the flow of funds. It could even be said that even if companies on the aggregate were diverting financial resources in favor of financial investments, some or most of these resources would come back at some stage in the circle, and would be placed into primary securities that would in turn, serve as an investible resource for another company issuing such a security. This is more or less the view expressed in some financial dailies by authors like Swaminathan Iyer (1994)[1].

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[1] Patnaik Prabhat (1994), Macro-Economic policy in times of Globalization, Economic and Political Weekly, April 16-23.

[1] Swaminathan S.Anklesaria Aiyar, ' Who is afraid of the financial boom', Economic Times, October 27, pp 8.

While the second argument may be correct in an accounting sense, it ignores the time lags and the distributional consequences. Further, the impact of this pattern, on the composition of income of companies that are predominantly into manufacturing activity, clearly shows that the trend towards deployment of resources into financial assets is a matter of consequence. A flow of funds analysis may still be relevant but beyond the scope of this study. However, that by itself does not take away the merit of observing aggregate patterns. On the main, the tendency of non financial companies to engage actively into financial investment activity is itself an interesting development. The short term and the long term consequences of the same are therefore deserve further study.

Conclusions : The analysis of the composition and pattern of investment in this chapter has revealed that during the 1975 to 1990 period, fixed investment by the private corporate sector grew at rate of over 10 percent. In, particular, the share of new capital works in gross fixed investment seem to have increased, indicating thereby, a move towards expansion and diversification. From around 1983-84, the private corporate sector started raising increasing amounts of financial resources from the capital markets. By the mid eighties, the private corporate sector started to deploy increasing volume of funds into financial investments. While increase in the available volume of funds did enable the private corporate sector to pursue such financial investments, the difference between the rate of return on fixed investments and financial investments seems to have been an important reason underlying this trend. Further, the interest rate structure and the yield on certain financial securities issued by the financial

institutions as also by public sector organizations appear to have influenced the composition of the corporate portfolio of financial investments. A large proportion of these funds appear to have found their way back into the capital markets, in particular the stock markets.

Towards the latter half of the eighties, the trend in fixed investments also showed a downward break. Some real factors on the supply and demand side could have been responsible for shaping the pattern of investment and the deployment of funds. Finally, it was seen that the tendency of non financial companies in the private corporate sector to actively participate in financial investments and thereby derive a substantial share of their profits in the form incomes and capital gains from financial assets was not a passing phase of the eighties, but has continued into the nineties as well.

The explanations provided in this chapter regarding the causes underlying the tendency of the corporate sector to undertake financial investment and its possible effects are in the nature of tentative hypothesis. A detailed analysis of these questions would necessarily involve considering the developments in the external sector as also industry level inter linkages, time lags between the raising and deployment of financial capital etc. which is task beyond the scope of this study. The data requirements and the absence of any ready and obvious theoretical framework also makes this task difficult. Nevertheless it is felt that these points could serve as useful lines of enquiry for further research.

Chapter IV

DETERMINANTS

In the previous chapter we noted that fixed investment grew at about 10 percent through the period 1975 to 1990. But, in the second half of the eighties, but there was a downward break in the investment trend. It was also seen that the private corporate sector was placing increasing volumes of funds into financial assets especially from the mid eighties. Relative returns on financial assets and other demand side factors appeared to have been important in inducing such behavior. While fixed investments moved in consonance with stock prices changes, especially from the mid eighties, financial investments were also sensitive to stock price movements. Considering the above background this chapter is mainly devoted to examining the determinants of fixed investments.

In section I we briefly discuss the data used for the analysis. In section II, the determinants of fixed investment by the private corporate sector during the period 1975 to 1990 are examined. In section III, the role of stock prices in determining fixed and financial investment will be analyzed. The relationship between fixed and financial investments will also be explored.

Section I

The analysis in this chapter also relies on Reserve Bank data on finances of non financial non government public limited companies. For estimating econometric relationships, it is necessary that the data reflect the aggregate values, for a fixed cohort of companies

(in terms of number as well as composition). For estimating various relationships we have used data generated through the 'method of averages'. The advantage of using this data set is that the influence of the changes in the sample size and composition of the sample (in the RBI data) are minimized. The estimates of the parameters so arrived at, relate to a more or less fixed cohort of companies. The conclusions thus derived can be generalized as being typical of a given group of firms in the corporate sector. The 'method of averages' is described in detail in Appendix I of this study.

Section II

Determinants of fixed investment : In chapter 3 we argued that changes in public investment has been an important determinant of private corporate investment in India. However, it is not merely government investment expenditure, but also its consumption expenditure that becomes important in this context. Changes in personal disposable income and consequent change in private consumption expenditure can also be an important determinant of private corporate investment. Change in the level of sales can be taken as representing these demand side effects. Therefore, the variable 'sales' will be taken to represent the net effect of all these demand side variables. In place of sales, the ratio of the inventory of finished goods to sales is also tried out as an alternative explanatory variable. This ratio can be taken to represent the prevalent market condition.

Almost all empirical studies in the Indian context have pointed to the importance of profits as a determinant of investment. This may be on account of various reasons, ranging from the existence of imperfect market structures with high degree of market concentration, the relative movements of prices of inputs and outputs and the pricing policies of corporate entities. In this study we take profits after taxes and operating profits in alternative specifications.

The study of determinants has been done mainly at current prices. The reason for taking data at current prices is as follows. The present exercise is on the basis of financial accounts. Financial outlays and expenditure form the basis of business decisions. Relationships between nominal outlays gives us a picture of business decisions which are taken based on prevailing or expected market conditions. As far as growth in real investment is concerned, we have already presented the picture in chapter II using national accounts data and chapter III using Reserve Bank data on the private corporate sector. However, some of the relationships on the determinants of fixed investment will also be estimated using data at constant prices.

Being an exploratory study we use the ordinary least squares method for estimating relationships. Abbreviations used for different variables are given in the following Box. All the regressions are for the period 1975-76 to 1989-90.

Abbreviations for variable names

FI	Financial investment.
Fins	Ratio of stock of finished goods to Sales
Funds	Total flow of external funds (additions to borrowing and equity).
GI	Gross fixed investment
LN ( )	Any of the variables in this list preceded by 'LN' implies its log value.
OP	Operating profits
PM	Investment in plant and machinery
PAT	Profits after taxes
SAL	SALES
SAL1	First difference of sales ($SAL_t - SAL_{t-1}$)
SPI	Stock price Index
Var(-1)	Any variable followed by (-1) is its one year lagged value

Linear specification : We have first used a linear specification in which the effects of the accelerator are capture through the first difference in sales ie, SAL1. The lagged value of profits after taxes ie., PAT(-1) is the second explanatory variable. The linear specification takes the following general form:

$$GI = a + ß\ SAL1 + \pi\ PAT(-1) + u$$

It is expected that both 'ß', 'π' would be positive.

The results of the regressions using the linear specification are presented as under.

$$GI = \underset{(-1.0)}{-\ 642.2} + \underset{(3.0)**}{3.16\ PAT(-1)} + \underset{(2.4)***}{0.25\ SAL1}$$

$$R^2 = 0.75 \qquad DW = 1.09$$

[Figures in brackets are t values * / ** /*** : Significant at 1%, 5% and 10 % level of significance respectively.]

The above result shows that during the period under study, both lagged values of profits and sales (accelerator) were important in determining the quantum of gross investment by the private corporate sector. However the level of profits (in absolute terms) was an important in determinant of level of fixed investment by the private corporate sector. This finding is in line with most of the earlier studies on India. Profits are important for making available internal funds and in determining accessibility to external funds. External funds in turn influence fixed investment. It seems clear that, as far as the level of current investment is concerned, the level of profits has continued to be important during the selected period. While the explanatory power of the regression is satisfactory in terms of the value of the R^2, the value of the DW statistic is indicative of the presence of positive autocorrelation among the residuals.

Double log specification : The previous relationship captures the link between the 'levels' of different variables, however, if the purpose is to study the extent to which fixed investment has been responsive to the proportionate changes in the variables indicated above, we need to normalize the variables with reference to their past (or trend values). For this reason, we have used the double log specification. The advantage of using the double log specification are two fold. First, it removes the effect of levels in the variable and captures mainly proportionate changes in the independent and dependent variable. This becomes useful, especially, when the numerical magnitudes of the dependent and the independent variable are vastly different and yet, for apriori reasons, it is expected that changes in one of the independent

variable is likely to give rise to changes in the dependent variable on the margin. For example, financial investment as such, forms a relatively small proportion of total net investment for the corporate sector. If we were to only look at absolute magnitudes of fixed investment vis-a-vis financial investment, then both would be rising over time. Second, the parameters in the double log specification represent elasticities and are meaningful for evaluating the responsiveness of a given variable to changes in other independent variables.

The general specification of the double log version for the relationship explaining changes in investment in terms of changes in sales and profit after taxes is as under:

$$LnGI = a + ß\ lnsal(-1) + c\ lnpat(-1) + u$$

In the aforesaid relationship both 'ß' and 'c' can be expected to be positive on an apriori basis. The value of 'a' would be normally negative, implying that the absence of sales revenues or profits may lead to disinvestment rather than fresh investment. We have used the ratio of finished goods to sales (FINS) in place of sales and operating profits (OP) in place of profit after taxes as alternative explanatory variables.

The results presented in Table 4.1 (equation 1 & 2) seem to indicate that even though fixed investment was responsive to changes in profits, during this period, however, it has in general been more responsive to changes in sales. Investment in plant and machinery was responsive to both changes in profits as also changes

in sales (equation 4). An interesting finding (equation 3) is that the change in the ratio of finished goods to sales appears to have had a negative impact on fixed investment decisions.

Table 4.1

Regression results (OLS) on the responsiveness of gross fixed investment (GI) to sales, profits etc. (All variables in log form, 1975-76 to 1989-90)

Ind. Var -> Dep Var	c	LNPAT(-1)	LNSAL(-1)	LnOP(-1)	LNFINS	R^2	DW
1. LNGI	-8.58 (-5.41)*	0.52 (1.72)	1.25 (4.93)*	-	-	0.90	1.58
2. LNGI	-10.82 (-5.51)*	-	1.28 (5.36)*	0.75 (1.76)	-	0.90	1.53
3. LNGI	2.76 (0.85)	1.53 (5.53)*	-	-	-2.43 (-2.27)**	0.79	1.83
4. LNPM	-8.19 (-5.81)	0.56 (2.09)***	1.16 (5.14)*	-	-	0.91	1.67

Figures in brackets are t values
* / ** /*** : Significant at 1%, 5% and 10 % level of significance respectively.

While the ratio of finished goods to sales (Fins) appears to have been an important consideration in making fixed investment decisions, an alternative specifications using the ratio of total inventory (including spares, Work in progress etc.) to sales as an explanatory variable did not yield significant results. This may be because the ratio of finished goods to sales could be more sensitive to market demand conditions. A higher ratio of finished goods to sales could also imply higher inventory carrying costs and blockage of working capital etc. On the other hand, as sales increase, other components of inventory such as spares etc also can be expected to increase in proportion.

Hitherto, we had conducted the determinants of investments exercise with all the variables at current prices. It would be interesting to see whether the above relationships hold when estimated at constant prices. For this reason we have presented under Table 4.2 the results based on data at constant prices (with the same specification as in table 4.1).

Table 4.2

Regression results (OLS) on the responsiveness of gross fixed investment to sales, profits etc.
(Period - 1975-76 to 1989-90)

Ind Var -> Dep Var	c	LnSal(-1)	LPat(-1)	R^2	DW
1) LnGI	-18.96 (-4.65)*	2.31 (5.92)*	0.47 (1.52)	0.77	1.86
2) LnPM	-18.09 (-5.14)	2.15 (6.43)*	0.52 (1.96)***	0.81	2.03

Figures in brackets are 't' values; * / ** /*** : Significant at 1%, 5% and 10 % level of significance respectively.
(All Variables in Log form ,Variables are at constant prices)

The conclusions with regard to the relative importance of the changes in independent variables and their impact on fixed investment do not change even when the data is taken at constant prices. However, as already explained, if the purpose is to finally capture the factors underlying deployment of financial resources into different uses, then a current price analysis is more relevant. In particular if the interest lies in relating fixed and financial investment, then the relative financial outlays assume importance. It would not be correct to deflate variables such as investment in financial assets. For these reasons, further analysis will be based on data at current prices.

Fixed investment, financial investment and stock prices :

We noted in chapter III that both fixed investment and financial investments appear to have been responsive to movements in stock prices. Regarding the relationship between stock prices and fixed investment, it would be useful to recall that according to the Tobins "q" theory, the stock market valuation of a firm in relation to its replacement value forms an important basis for fixed investment decisions. For the economy, or for the corporate sector as a whole, there is no meaningful way of determining the value of 'q'. However, the stock market index is a weighted average of the index numbers of industrial stocks for a variety of industries and is expected to reflect overall business sentiment for the economy. To take into account expectations, the stock market index for industrial securities is included as an explanatory variable.

As for the relationship between financial investments and stock prices, it was noted in chapter III (section IV) that through the eighties, the composition of the portfolio of corporate financial investments was such that some of these investments were directed back into corporate securities, either directly, or indirectly (through financial institutions). Further, it was also seen that the relative movements of financial investments vis-a-vis stock prices reflected a profit taking behavior by the corporate sector. Therefore, we could expect that movements in financial investments to be positively related to stock prices.

While the role of sales, profits, stock prices etc. in determining fixed investment has been explored in both theoretical and empirical literature, the relationship between financial and fixed

investments does not appear to be clear. Based our observations made in the previous chapter, we could say that the extent to which financial and fixed investments compete with each other or are complementary to each other would depend on a host of factors which could include, inter-alia, the relative profitability between fixed to financial investments, availability of funds, etc.

Under Table 4.3 we present the results of the regressions that explore the relationship between fixed and financial investment.

Table 4.3

Relationship between gross fixed investment, stock prices, financial investment.

IND VAR-> DEP.Var	c	LNFI	LNGI	LNGI(-1)	LNSP	R^2	DW
1. LNGI	2.33 (2.38)**	0.17 (1.99)***	-	0.61 (3.66)*	-	0.87	1.89
2. LNFI	-9.69 (-6.2)*	-	0.35 (0.82)	-	2.33 (3.34)*	0.87	2.01
3. LNFI	-9.59 (4.38)*	-		-0.09 (-0.16)	3.11 (3.07)*	0.79	1.64

Figures in brackets are 't' values.
* / ** /*** : Significant at 1%, 5% and 10 % level of significance respectively.

It is interesting to note that, the results in equation 1 of Table 4.3 shows that investment in fixed assets and financial assets during the same period are not competing, implying thereby, that on the margin, a proportionate increase in financial investment does not displace investment in fixed assets. Similarly, equation 2 shows that financial investments have been mainly fuelled by the rise in stock prices and that investment in fixed assets have not

had a negative impact on financial investments. Equation 3. shows that investment in fixed assets with a one year lag may have had a negative impact on financial investment, but the result is not statistically significant. Part of the reason of these findings can be found from the results presented in Table 4.4.

From Table 4.4 it is seen that while financial investment was strongly influenced by the rise in stock prices, so was fixed investment. By comparing relationship 1 and 4 it is evident, that financial investment was more responsive to stock prices as compared to fixed investment. This is an important finding.

Table 4.4

Responsiveness of gross fixed investment to stock prices

Ind. Var -> Dep.Var	c	LNSP	LNSP(-1)	LNPAT(-1)	R^2	DW
1) LNGI	0.67 (0.68)	1.43 (7.12)*	-	-	0.79	0.95 @
2) LNGI	0.75 (0.63)	-	1.45 (5.9)*		0.74	1.00 @
3) LNGI	-2.12 (-1.44)	-	0.79 (2.42)**	0.92 (2.61)**	0.84	1.89
4) LNFI	-8.96 (4.32)*	2.74 (6.41)*	-	-	0.78	2.22

Figures in brackets are 't' values; * / ** /*** : Significant at 1%, 5% and 10 % level of significance respectively. (@) : Durbin test for autocorrelation inconclusive at 1% significance.

Further examination of the route of causation is revealed through the relationship estimated below. It is seen that the increase in the total volume of external funds (by way of borrowing as also additions to equity capital) has been an important determinant of fixed investment.

a) LNGI = -0.67 C + 0.66 lnPAT(-1) + 0.56 lnfunds(-1)
(-0.38) (1.42) (2.28)**

R2 = 0.83 DW = 1.92

b) LNGI = -9.08 - 0.03 LNFUND(-1) + 1.66 LNSAL(-1)
(2.59)** (0.10) (2.95)***

R2 = 0.87 DW = 1.26

What the previous two relationships (a and b) show is that the increase in the total volume in the funds raised through external sources had a significant and positive impact on the rate of investment in fixed assets. On the other hand when we use sales (relation b) as an explanatory variable it is seen that the estimate for the parameter for funds becomes insignificant. This is because of the high degree of multicollinearity between sales stock prices and funds. This brings us to the problem of simultaneity that exists between all the relationships that we have been dealing with so far. Indeed, it appears that the buoyancy of the stock market expressed through increases in the stock market index enabled the corporate sector to raise higher volumes of funds, which in turn, enabled higher fixed as well as financial investment.

Conclusion: From the above analysis it seems that while the level of profits was an important determinant of the level of fixed investment for the private corporate sector during the period 1975 to 1990, however, changes in fixed investment was more responsive to demand side factors represented through sales.

The significance of change in sales, as was seen through the relationships under Table 4.2, is perhaps indicative of the fact that during the period under study, market related factors especially the prospects of higher growth in the overall economic activity played an important role in determining changes in investment. It is also likely that greater opportunities for expansion and diversification could have enabled the corporate sector to garner higher volumes of funds based on expected future profits rather than changes in past or current profits. In this respect it is possible that policy changes may have stimulated the growth of capital markets that in turn relaxed the financial constraints faced by the corporate sector.

It also seems as if financial and fixed investment were complementary. The effect of increases in stock prices has been positive as far as fixed investment is concerned. The reason for this appears to have been the general increase in the volume of funds which enabled increases in both fixed and financial investments. However, financial investment has been more sensitive to changes in stock prices as compared to fixed investment. This also confirms the observations made in the previous chapter regarding the pattern of movements of these variables.

Chapter V

SUMMARY AND CONCLUSIONS

This study on the trends, patterns and determinants of private corporate investment in India captures some important dimensions of the investment behavior of the Indian private corporate sector. While the study covers the period from 1975 to 1990, the focus has largely been on the eighties. The policy measures initiated during the eighties were clearly aimed at allowing greater scope to the private corporate sector, to expand and to diversify. In that sense, the findings of the study can be considered to be relevant to an initial phase of liberalization. The study shows that the private corporate sector recorded a higher growth rate during the period under review relative to the earlier period. This suggests that the private corporate sector is responsive to changes in the policy regime, particularly with regard to its investment and financing decisions. The study also bring home the importance of keeping in view the composition and structure of different sectors of the economy while studying interrelationships between them. This is particularly relevant while examining the relationship between public sector and private sector investment. The study reveals that profit is an important determinant of level of investment. However, it is the changes in demand that play a crucial role in determining changes in the pattern of investment. On the whole, the findings in this study suggest that public policy has an important role to play even in relatively liberal environment, where market signals form the basis for investment decisions of the private sector. In

concluding this study we bring together some of the key findings and draw their implications on our understanding of corporate sector behavior and on public policy.

To place the changes in private corporate investment in proper perspective, the analysis of the aggregate trends has been done for the period 1950 to 1990. This analysis shows that the public sector in India continued to be dominant in terms of its share in gross capital formation to the end of the eighties. However, the importance of the private corporate sector grew, during the period 1975 to 1990. The revival of growth in capital formation from the mid-seventies (after a period of stagnation) was marked in the private corporate sector as compared to the public sector.

The study reveals that there has been a complementary relationship between public and private investment in India between 1950 to 1990. However, this complementarity appears to have weakened from the late seventies onwards, and particularly, during the eighties as compared to the earlier decades. The most plausible reason appears to be the changes that occurred in the composition of both public and private investment during this period. There is evidence to show that public investment stagnated or declined in certain critical areas such as manufacturing, transport, agriculture etc. between 1975 and 1990. Further, a large proportion of public investment during the post 1975 period was concentrated into energy, mining and quarrying and communications. These investments were largely import dependent. The aforesaid pattern of investment may have led to a weakening in the direct complementarity between the two sectors. Therefore, the changes in the composition of

public and private investment and the interlinkages between the two deserves further study and research not only at the aggregate level but also at the sectoral level.

The increase in the importance of the private corporate sector during the post 1975 period, was in response to the policy changes initiated during this period. The analysis of the composition and pattern of investment reveals that gross fixed investment by the private corporate sector grew at a rate of 10 percent between 1975-76 and 1990-91. The share of 'capital works in progress' in gross fixed investment increased in relation to other components of gross fixed investment. The increase in the share of this component gives an indication that fixed investment was mainly directed towards new projects aimed at expansion and diversification.

From around 1983-84, the private corporate sector started to raise increasing amounts of financial resources from the capital markets. This was also accompanied by an increase in the stock prices as reflected through the all India index of industrial securities. Public issues by public limited companies was still subject to controls during the eighties. It is therefore likely, that the recourse to the capital market for additional resources was primarily for funding fixed investment.

Fixed investment in the private corporate sector did grow between 1975 to 1990. But this study shows that from the mid-eighties onwards, the private corporate sector started deploying increasing volumes of funds into financial investments. The increase in the volume of funds raised through various sources, particularly, from

the capital markets, may have enabled the private corporate sector to pursue such financial investments. However, other factors also seem to have caused the relative shift in favor of financial assets. The difference between the rate of return on fixed investments and financial investments appears to have been an important reason underlying this trend. Our study reveals that the difference between the return on fixed investment as compared to the gains through holding of financial securities widened during the eighties. In fact, profitability of the corporate sector as measured through various alternative ratios stagnated or declined during this period.

The differential between the yield on financial securities issued by the financial institutions and public sector organizations as compared to cost of finance appears to have influenced the composition of the corporate portfolio of financial investments. Securities of financial institutions together with industrial securities came to account almost 75 percent of the corporate investment portfolio by the late eighties. A large proportion of financial investment by the corporate sector thus seemed to have found its way back into the capital markets, in particular the stock markets.

The study shows that the increased involvement of the private corporate sector in financial investment got reflected through a corresponding increase in 'other incomes' and 'non operating surpluses'. It is interesting to note that as opposed to the trend in financial investments, the trend in fixed investments showed a downward break in the latter half of the eighties. We have

suggested that some real factors on the supply and demand side could have also been responsible in shaping the pattern of investment and the deployment of funds.

In the aforesaid context, the study on the determinants of fixed investment shows that the level of profits was no doubt an important determinant of the level of fixed investment for the private corporate sector during the period 1975 to 1990. However, changes in fixed investment were more responsive to demand side factors represented by change in sales, whereas change in profits appear to have played a minor role. The effect of the increase in stock prices seems to have been positive on both fixed and financial investment. For this reason, it appears that changes in fixed and financial investments had a weak but complementary relationship. The relative increase in the use of funds for financial investment becomes clear in light of following important result. Our analysis shows that financial investments were more sensitive to changes in stock prices as compared to fixed investment.

The findings of this study when linked together enable us to draw some conclusions on the behavior of the corporate sector and the role of public policy in a regime of liberalization. To illustrate, the debate on the complementarity between the public and the private sector has to take into account the sectoral composition of investment. It follows, that any move to redefine the role of the public sector and the extent of public intervention should also consider the interlinkages and the compositional aspects of investment. The fact that financial investment activity and income

arising thereof became significant for non financial companies (in the private corporate sector) is an interesting development, though, it is difficult to predict whether this trend will continue or not. In this context, some recent studies on industrialized countries also point to the increasing tendency of manufacturing companies to engage in portfolio related activities. Studies on the Indian private corporate sector will therefore, need to take into account this added dimension. The observed trend towards financial investments and the finding that aggregate demand has a major influence on the pattern of investment have distributional implications. For these reasons, it can be said that even in an economy where the private corporate sector is left to operate on the basis of market signals, public policy has still a role to play.

Appendix I

An alternative approach to using RBI data on public limited companies

Economic enterprises can be broadly categorized as being either in the public sector or the private sector depending on the ownership. Private sector enterprises could be further classified as joint stock companies (public and Private limited companies), cooperatives, partnerships, depending on the statute under which they are incorporated. The precise definition of each of the aforesaid forms of enterprises are to be found under the relevant statutes under which the enterprises are registered. Enterprises that are not incorporated under any particular legislation mainly comprise of household industries. In this note we are only concerned with data sources relating to non financial non governmental public limited companies in the private corporate sector. For analyzing investment by the private corporate sector in India, researchers have mostly relied on or more of the following sources.

a) Combined and financial accounts on joint stock companies published by the Reserve Bank of India;
b) The Official Stock Exchange Directory published by the Bombay stock Exchange;
c) Data on the Corporate Sector compiled /published by some private agencies such as the Centre for Monitoring of the Indian Economy, Bombay.
d) Financial Accounts of individual companies published in their annual reports.

The choice among these sources depends on the nature and the scope of the intended study and the desired level of disaggregation.

Subsequent discussion will however be limited to data published by the Reserve Bank of India on finances of non government non financial public Limited Companies wherein combined financial accounts (Balance Sheet, Income and Expenditure Account and Sources and Uses statement) are presented. Financial accounts of public limited companies in the private corporate sector are prepared on the basis of sample surveys that are carried out on a regular basis.

The RBI studies on public limited companies, includes, companies of different size classes, defined in terms of the paid-up capital of the company. Till 1975-76, data on small public limited companies (ie.with paid-up capital of less than 5 lakhs) used to be published separately. However, between 1976-77 and 1981-82, small public limited companies were not studied at all. The sample period of our study is 1975 to 1990. Therefore for the period from 1975 to 1982 we have relied on the data pertaining to medium and large companies only. Thereafter, the RBI studies cover small, medium and large companies in each of the studies on the finances of public limited companies.

The proportion of the sample companies in terms of the total paid-up capital of the entire population of public limited companies was around 70 percent between 1975-76 and 1984-85, thereafter, it has been about 65 percent. For the year 1990-91 the coverage in terms of paid-up capital is about 60 percent. Data on the proportion of coverage for each of the size classes in terms of the total paid-up capital for each category is not mentioned in all the studies. However, it seems clear that the extent of coverage for large and

medium companies is very high (about 80 percent) whereas the coverage of small companies is lower. This may be due to the skewed distribution of public limited companies according to paid-up capital.[1] The study for any given year is accompanied by corresponding figures for the previous one or two years. An illustration of the same is given under Table I.

Table I

Illustrative data from the combined balance sheet on public limited companies

Ref *	Year	No of Cos.	Paid up Capital	Gross Fix.Asset	Plant M/c
11/92	1987/88	1908	5561	43999	31553
	1988/89	1908	6094	49663	35380
	1989/90	1908	6703	56724	40975
12/93	1988/89	2131	6704	50813	36261
	1989/90	2131	7364	57866	42023
	1990/91	2131	8204	68462	48843

Source:RBI Bulletin. (*Nov 1992 and Dec 1993)

For any given year, barring the most recent, we have aggregate information on different variables such as gross fixed assets (GFA), sales etc. from two different samples. In general, the size of the sample in terms of number of companies has been increasing over the years. As far as possible, most companies included in the previous sample are also included in the subsequent sample. For example, the combined balance sheet for non government non financial companies published in the RBI Bulletin of December 1993 provides data for the years 1988-89, 1989-90, and 1990-91 and is

[1] For further details on the extent of coverage for each sample survey ref. Uma Datta Roy Chaudhari (1992), Journal of Indian School of Political Economy, Vol.4 No.4, pp 599, 616 and 643.

based on a sample of 2131 companies The RBI Bulletin for November, 1992 provides combined data on 1908 companies for the years 1987-88, 1988-89 and 1989-90. The two studies have 1647 companies in common. It is noticed that almost 75 percent of the companies in every successive sample were included in the earlier sample as well. Nevertheless, it can be expected that the composition of the sample would have changed over the years.

The main difficulty in using RBI data is the lack of a continuous time series, and this is due to changes in the sample size. At the same time, it is the only official source that has been consistently bringing out such combined financial data right from 1950s. Two serious attempts at resolving these problems especially for the purpose of arriving at estimates for population aggregates are the studies by Shanta (1991) and Datta Roy Chowdhary (1992). The methods employed by different authors for analyzing the performance of the corporate sector using this source can be classified as follows : -

i) **Separate samples method:** Using data from each sample independently and restricting analysis to making comparisons between consecutive years covered in each study.

ii) **Ratios method** : Computing financial and other ratios by normalizing sample aggregates, say profits, sales etc. by some divisor and observing the changes in the ratios through successive samples and years. This method is straight forward and does not need further elaboration.

iii) **Blow up factor method:** This method involves using the proportion of paid-up capital of the sample companies to the paid-up capital of all public limited companies as a 'blow up factor' and multiplying all other variables such as gross assets, sales etc. by the inverse of this ratio to arrive at estimates for all non government, non financial public limited companies. The blow up factor method using paid-up capital has been used (by RBI) to estimate population aggregates. This method assumes that the relationship between paid-up capital and a diverse set of stock and flow variables such as gross fixed assets, sales, profits etc. is invariant over time. This assumption has been criticized as being quite unrealistic leading to unreliable estimates (Datta Roy Chowdhary, 1992) and we do not discuss this method any further.

iv) **Representative firm method:** In this method sample aggregates are normalized by the number of companies in the sample thereby obtaining a per firm value for all variables such as gross fixed assets, sales etc. The analysis is then carried out on the basis of this representative average firm and the results generalized for the corporate sector (eg. Mishra 1989). There is some merit in adopting this method as it obviates the necessity of linking samples of varying sizes. Further, the RBI studies provide combined data for different size classes and industry groups. This method can be useful for making comparisons across size categories.

V) **Method of proportions:** This method involves arriving at an adjustment factor for each variable separately from the results for the common year from every set of two consecutive surveys. This adjustment factor is then used to blow up the value of the same

variable for the earlier year from the smaller sample thereby adjusting the smaller of the two samples to the larger one (Sarkar 1970). Such an exercise is carried out for each variable separately in an iterative manner till all variables for all the years are adjusted to a common sample size (ie. a uniform number of companies). In case census data is available for any one of the intervening years, one could use this method to further adjust the data to arrive at aggregates for the entire population (Shanta 1990).

The limitation of this procedure is that the repeated use of a ratio between values of a variable from two successive samples (for the same year) for adjusting previous samples, transforms the year to year fluctuations considerably. Each time a new and larger sample is available, data pertaining to the first year selected for the study (which may be as way back as 15 or 20 years) also needs to be transformed. In this way bias of an almost indeterminate variety gets introduced. Further, the method of proportions assumes that the aggregates in the additional set of companies covered in a subsequent sample maintain a constant proportion vis-a-vis the aggregates in the previous sample. This method has been employed by some authors for arriving at a time series for aggregates such as gross fixed assets, sales etc. for a constant sample of companies. The adjusted series has then been used for the purpose of studying the determinants of investment (Sarkar 1970).

Given the serious limitation arising out of the changes in the sample size, all the methods mentioned so far, including, the ones that we propose to use suffer from one or the other limitation.

The criteria for devising and deciding upon any particular method should therefore be its appropriateness to the problem at hand. If we are interested in observing variations in different variables over a period of time and to make comparisons, say between changes in different components of gross fixed assets or income, then it becomes necessary to capture year to year growth in different variables as fully as possible. For this purpose we have devised a simple method called the 'method of indices' for arriving at value indices for different sample aggregates.

Method of indices: If the main object of a study is to draw some inferences on the change in say 'sales' based on sample data, then it is necessary to capture the year to year growth in any given variable. For the purpose of looking at the changes that have taken place in different variables we construct value indices, the procedure for which is as follows.

Simple growth rates are computed between successive years for each variable for each sample separately. For example, the study of November, 1992 provides combined financial accounts for 1908 companies for the years 1987-88, 1988-89 and 1989-90. The study of December 1993, provides data on 2131 companies for the years 1988-89, 1989-90, 1990-91. From the above data we obtain annual growth rates of each variable. The growth rate for 1988-89 over 1987-88 is computed from the first sample. Similarly the growth rate for the year 1990-91 over 1989-90 and 1989-90 over 1988-89 is computed from the second sample. This procedure is repeated till the first year chosen in our data set, say 1973. We take the value index for a suitable year (in this case 1980-81) as equal to 100. The series of

growth rates for the said variable are then used to arrive at an index number for any given year. The assumptions on which this procedure relies are as follows.

The sample proportion in terms of paid-up capital and sample size in terms of number of companies has been consistently large in relation to the total population. A majority of companies are retained from one sample study to the next. Even if the composition changes from sample to sample, it is assumed that at the aggregate growth pattern would not change. This is because of the large sample size selected from across different industries and size classes, based on the above characteristics of RBI data we make an assumption that even though sample aggregates, for say gross fixed assets (GFA) for the year 1987-88 on the basis of 1908 companies and that for GFA for 1988-89 for 2131 companies cannot obviously be strung into a common time series, the growth rate of the sample aggregate for 1988-89 over 1987-88 from sample 1 and the growth rate for 1989-90 over 1988-89 from sample 2 can be used as a series of growth rates. On the basis of this series (of growth rates) value indices can be generated by taking the value for a given year as equal to 100.

Indices for different variables relating to the public limited companies in the private corporate sector have been generated and presented in the main text of this study as and where appropriate. Further, it is also possible to arrive at a constant price series for any given variable by deflating the same using an appropriate price index series.

Method of averages: If the study requires a time series where absolute magnitudes are also important, and the objective is to estimate a relationship, such as, the effect of say the accelerator or profits on investment, then it is necessary to maintain a constant sample size to eliminate the effects of an increase in the number of companies. Each successive observation should also pertain to, the same set of companies as far as possible. In any case, the method by which successive samples are selected should not have undergone a change. For this purpose we suggest a method which shall be called, the "method of averages." The steps involved in arriving at a time series for a fixed number of companies is described as follows:

i) In Table 1 we have two samples for the year 1988-89. The first sample based on 1908 (n1) companies shows the Gross fixed assets (GFA) to be Rs.49663 crores. Let us call it GFA 1. The second sample based on 2131 (n2) companies shows the gross fixed assets to be Rs. 50813 crores (GFA 2). A per firm average GFA(PF) is computed by combining the two samples.

$$\text{ie. GFA (per firm)} = \text{GFA(PF)} = \frac{GFA1 + GFA2}{n1 + n2} \qquad (1)$$

This exercise is carried out each and every year for which we have two or more samples. Therefore for 16 years from 1975 to 1990 we obtain 16 such values.

ii) Next a bench mark year is selected which should preferably be an intermediate year in the sample period selected for the study. In this study we have taken 1980-81 as the bench mark year when the

sample size was 1720 companies. Successive 'per firm' averages are then blown up by the sample size (S) of the selected bench mark year to obtain a series for a constant number of companies.

Thus $GFA_t = GFA(PF)_t * S.$

The method appears deceptively simple. Therefore, one may be led to doubt the validity of simply combining two or more samples of unequal size (even though they pertain to the same year), arriving at a per unit average and then blowing it back by a constant which equal to the sample size of an intermediate bench mark year. In essence, we do rely on the basic characteristics of the method of sample selection used by the RBI which in brief is as under.

a) Successive samples are selected in such a way that most of the companies selected in the earlier sample are retained as far as possible. The overlap between successive samples (even though of unequal size) is mostly in the range of 70 % of the. This information is available for the studies published in the RBI bulletin of 1990 and onwards (ie.for samples after 1984). For the earlier studies, the exact number of companies common between successive samples is not known.

b) Successive samples are selected so as to ensure maximum possible coverage in terms of the paid-up capital at the industry group level.

c) The coverage of the samples companies in terms of the paid up capital of the population of all non financial non governmental public limited companies has been in the range of 60 to 70 %.

It can easily be shown that the above method is equivalent to taking a weighted sum of the per unit GFA from each sample and then blowing up for a constant sample size.

Expression (1) arrived at earlier ie.

$$GFA(PF) = \frac{GFA1 + GFA2}{n1 + n2} \qquad [1]$$

can be rewritten as:

$$GFA(PF) = [w_1 (GFA\ PF\ 1) + w_2(GFA\ PF\ 2)] \qquad [2]$$

where $w1 = n1/(n1 + n2)$ & $w2 = n2/(n1 + n2)$

When the expression [2] is opened out both n1 and n2 cancel out leaving the expression for purposes of computation to be given by [1] above. By combining the two samples, in effect we arrive at an interpolated estimate of per unit GFA. In this context it is important to know the importance of overlapping samples.

Let us assume that sample 1 for the year 1988 has two groups of companies X and Y. The second sample contains Y and Z companies. Therefore, Y number of companies are common between the two samples. However, being aggregate data we cannot identify those Y companies. X is the number of companies that sample 1 covers, but are not included in sample 2. Similarly Z is the number of companies that sample 2 has but are excluded from sample 1. When we add the two samples in effect we are using this additional

information which would have been lost had, we relied on only one of the two samples for a given year.

More importantly, the common companies get twice the weight since they are counted twice. This may lead us to believe that the per firm averages and the aggregates arrived at on this basis would be highly biased. This view is correct. The averages as also the aggregates arrived on this basis would be biased in favor of the companies that are common to two samples. This is precisely what we want. It is in utilizing this feature of the RBI data by which as many common companies as possible are retained, that the strength of this method lies. The method of averages that we intend adopting is some what akin to the 'per firm' method, except that it utilizes additional information that is available from two samples for the same year.

There are however two caveats. First, the sample size to which the averages are blown up should be neither the smallest nor the largest one. Second the choice of the bench mark year should be confined to a year which is in the middle of the period chosen for the study. The reason is that this method implicitly assumes the continued existence of firms through the entire period of the study. By choosing an intermediate year this condition is fulfilled as best as possible.

Other important limitations of RBI data which are well known are briefly discussed as under.[1]

a) RBI data is based on Annual reports of companies and the emphasis is mainly on financial variables defined more in terms of accounting principles rather than their economic meaning. This is a well-known limitation and some aspects of this have been discussed in chapter III.

b) Inter corporate transactions are not adjusted while arriving at the combined financial statements. When it comes to data on financial flows (particularly financial investment), it important to be aware of this fact. Additional insight can no doubt be obtained by doing a flow of funds analysis. However as discussed in chapter III (section IV), this limitation by itself does not take away the merits of doing an aggregate level study.

d) RBI Data is not based on a random sample, as such it is based on a purposive sample wherein the effort is give adequate representation for companies belonging to different industry groups and size classes. However this problem is some what compensated by virtue of the large sample size.

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[1] For a detailed discussions on the limitations of RBI data on finances of joint stock companies see Mishra B.M (1989) Financing of Private Corporate Sector in India, Centre for Development Studies, Trivandrum, pp 146-147.

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