CONCENTRATION IN INDIAN MANUFACTURING INDUSTRY: 1970 TO 1990

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M. VIJAYA BASKAR

CENTRE FOR DEVELOPMENT STUDIES
THIRUVANANTHAPURAM

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I affirm that the research for this dissertation titled **'Concentration in Indian Manufacturing Industry, 1970-1990'** being submitted to the Jawaharlal Nehru University, New Delhi, for the award of the Degree of Master of Philosophy in Applied Economics, was carried out entirely by me at the Centre for Development Studies, Thiruvananthapuram.

M. Vijaya Baskar

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

Sunil Mani
Research Associate

K.K. Subrahmanian
Fellow

Supervisors

P.S. George
Director
Centre For Development Studies
Thiruvananthapuram.

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CHAPTER I

INTRODUCTION

The problem of industrial concentration has occupied the attention not only of organisation theorists and industrial economists, but also of planners and sociologists because of its wide ramifications in spheres like organisation of production, technological choice, income distribution and economic growth.The present study examines the changes in a very important dimension of market structure, viz, concentration, over time and its association with innovativeness in the Indian manufacturing sector.

Industrial Concentration:

The defining features of a market structure are concentration, product differentiation, conditions of entry and elasticity aspects of market demand. The term concentration broadly refers to the degree of control over the market exercised by sellers of a product as derived, basically, from their number. The degree of concentration prevailing in an industry is determined by four factors.

1. Size distribution of firms.
2. Specific product market concentration
3. Product diversity of firms.
4. Degree of vertical integration.

Industrial concentration could be of two kinds: product-wise (industry-wise or disaggregate) concentration and

country-wide (aggregate) concentration. In the former situation, control may be exercised either by a single firm or a small number of firms over the production and/or distribution of a product. Thereby, the firm/firms are in a position to dictate prices, regulate output levels and prevent competition by creating artificial barriers to entry. Alternatively, there could exist a large number of firms engaged in varied product-lines, but under a common control or command. By virtue of this, this central authority can influence different sectors within manufacturing industry and few such groups could control a vast amount of economic resources. This is termed as country-wide or economy-wide concentration. Though these two forms of concentration often go along together, analytical convenience warrants the distinction.

Implications of Industrial Concentration:

In neoclassical theory, an ideal market structure is viewed as characterised by a large number of autonomous buyers and sellers for whom price is a given parameter, with free entry of firms, and no single firm having a determining influence on the market. In such a market, ie, a perfectly competitive market, resources would flow in and out of economic activities as dictated by market forces leading to a `Pareto' efficient situation. Concentration is thus, seen as a deviation from perfect competition. Such deviations, are however, matters of concern as these indicate that the `efficiency of the market', ie, the free play of market forces, is impaired. Concentration gives rise to undesirable consequences including inefficient

methods of production and higher prices for the consumers. In a monopoly market, by virtue of the monopoly power, the producer is in a position to dictate either the price or output level of a product and thereby reap monopoly profits. In an oligopolistic situation, two or three large firms accounting for a major share of the product sales may enter into a collusive agreement to fix prices. There, price competition is replaced by non-price competition carried through advertising and product differentiation. Advertising reinforces product differentiation by creating strong brand loyalty, which in turn facilitates the firms to charge monopoly prices. These artificial barriers to entry would prevent new firms as only firms with the ability to market and compete at least at par can come in.

In a situation of vertical integration, the producers can stifle competition by cutting off the supplies to potential rivals and restricting access of suppliers to other buyers. Again, by conglomerate expansion, cross subsidisation is possible, ie, a firm by virtue of monopoly profits in one product market underprices a commodity in another market and thereby thwart entry of other firms. Thus, even though such firms do not have a dominant share in a particular market, they behave as if they do. The impact of concentration is however, not confined within the market.

The Question of Industrial Concentration in India:

It has been noted that concentration leads to "...the creation of industrial empires tending to cast shadows over

political democracy and social values" (Monopolies Inquiry Commission, 1965, p:1). Industrial concentration is an index of business power and thereby, economic power. In India, due to the limited nature of the market for most products in the initial phases of development and the large economies of scale of modern technology it has to use to achieve rapid growth, it was assumed that it is but natural that there would be a high level of concentration initially. Further, mobilisation of capital for investment is difficult and very few capitalists would be in a position to invest, leading to high aggregate concentration as well. However, as the developmental process accelerates, an increase in income and a consequent increase in the effective demand for different products may be expected. This growth of the market should enable more firms to enter into production; thus leading to a reduction in product-wise concentration and correspondingly an increase in competition between firms in the long run. On the contrary, it is possible that the firms in well entrenched monopoly positions, may, through better access to financial and other economic resources, restrict the entry of new firms and stifle competitive forces. This is to say that firms with monopoly power may continue to maintain or even increase their monopoly power with the result that over time, monopoly power, instead of vanishing may get strengthened. In this context, an examination of the trends in industrial concentration gains significance.

Underdeveloped markets and inadequacy of factors of production are the major obstacles for any backward economy moving on the capitalist path of development. Hence, there

arises the need for State intervention to correct these anomalies. Setting up of a strong public sector is a major mode of government intervention which is seen as a measure to counter the threat of private monopoly power. Government intervention with a view to influence costs, prices and output levels through taxes and subsidies could also be evidenced. Again, artificial barriers to entry can be raised through licensing, tariffs, import quotas, etc. Therefore, a study of the trends in industrial concentration can also serve to indirectly test the effectiveness of state intervention in the market.

Further, concentration has been found to be significantly associated with technical change. It is believed that monopoly power invests the firms with the ability to indulge in innovative activity. Contrarily, a more competitive situation may force the firms to acquire cheaper methods of production. A study of the nature of their association in the Indian context would indicate the implications of market concentration for technological progress.

Approaches to Study of Concentration:

The study of concentration as an important element of market structure has been carried out largely by the industrial organisation theorists. A major school of thought in industrial organisation theory, pioneered by Edward Mason in 1930s, has organised its enquiries around the relationships between industrial structure, behaviour of firms and economic performance judged according to the norms of economic welfare.

A central paradigm adopted by these theorists is the Structure - Conduct - Performance (S-C-P) paradigm. It proposes a causative linkage between these three dimensions. The structural variables like concentration, barriers to entry, etc are supposed to affect the conduct of firms with regard to the type of pricing policies the firms adopt, methods employed in achieving their pricing objectives like overt collusive arrangements, tacit interdependence and promotional policies. The conduct of the firms in turn determine the performance with regard to long run price differentials, progressiveness of the industry with respect to technological behaviour, presence of unutilised capacity and profitability.

The S-C-P paradigm, born out of a static micro economic framework, has had enormous appeal due to its analytical power and has spurred numerous works seeking to test its validity in the developed economies. Over the years, this static framework has given place to a more dynamic one which concedes the strong relationship between these variables without allowing for any linear causal linkages. Past performance may influence present structure, which would in turn affect future performance. The relative importance of these variables may vary. Suffice it to say that market structure affects the performance of the industry and thereby the economy as a whole.

However, this approach suffers from certain limitations. Here, markets are essentially viewed as a series of static structures with varying degrees of monopoly power. On

the one end of the spectrum, there is monopoly and at the other end, perfect competition, and a blend of the two in between. Each market structure is treated in isolation not only in time but also from other sectors of the economy. This comparative static analysis fails to explain the process of the shift from one market structure to another.

Market structure evolves out of certain historical conditions and is affected not only by microeconomic variables, but also by political and legal structures. This approach fails to occupy itself with the concrete conditions that gave rise to concentration, the manner in which small firms over a long drawn out phase of stiff competition have grown into monopolies. The reasons for concentration could be different in different economies. But to the neoclassical theorist, the size and number of the firms in a market is determined by the "relationship between technology (influencing the cost conditions) and the slope and position of the demand curve, a industry faces. Another inadequacy is that it treats aggregate concentration as merely a summation of market power in individual product markets. The relationship between big business and the state is totally ignored here.

The Marxist political economists on the other hand, view the process of concentration in the context of capitalist accumulation and drive for profits. Capital exists as different blocks and controlled by different groups. Capitalists' drive for profits leads to rivalry between these blocks, seeking to grow and occupy the available economic space. This struggle is

aided by a wide range of economic, political, ideological and legal measures, which include technology, communication, control, managerial skills, etc. In the capitalist system, competition is the form in which the tendency to accumulate impinges on other blocks of capital. For the process of accumulation to go on, firms must seek control of three important areas[1].

1) The Labour Process. (vital for control of costs and use of new technology).

2) Market for the product (for control over price or output levels.)

3) Finance and credit,(necessary for expansion).

As the rates of profit would be different in different sectors owing to various reasons, the firms tend to move into areas where the profit rates are greater. This process of diversification leads to the formation of giant conglomerates with multiple product lines.

Marx identified two aspects of this process; (a) concentration of capital, by which he meant the growth of the size of the firm itself with profits being ploughed back into investment in an increasing cycle of self-expansion, and (b) centralisation of capital, characterised by a combination of independent enterprises through manipulations in the financial sphere (mergers,takeovers,etc). Marx was also aware of the inverse tendency ie., the tendency towards dispersion; large blocks of capital being split up and appearance of new ones[2]. In the Marxian framework, reduction in the number of firms doesn't imply a less competitive structure, but merely a qualitative shift in the nature of competition. Costs are incurred when interdependence of firms leads to a shift from price competition

to non-price competition. Intense competition too leads to loss of market power, resulting in greater product differentiation and therefore, increase in promotion costs and lowering of real output.

Besides Marx's own work on concentration, works by Lenin(1948), Hilferding(1981) and Baran and Sweezy(1966) deserve special mention. Capitalist system had undergone significant changes since Marx's days and by the post second World War period, monopoly capitalism had assumed the predominant role in the capitalist system of production. This led Baran and Sweezy to understand the implications of monopoly capitalism in detail, and identify the new laws of capitalist development. However, concentration, as it developed and is prevalent in the advanced capitalist economies, is qualitatively different from the kind of monopoly present in a developing economy like India. Hence, one needs to begin the analysis by looking at the concrete historical factors that shaped the structure of Indian industry by analysing the nature of government policy with regard to industrial structure. Before that, some of the relevant empirical studies done in the developed economies and in the Indian context have been reviewed with a view to sharpen the focus of the present study.

Review of Literature:

The concerned literature may be broadly classified into two types. Whereas, most of them are econometric exercises, measuring concentration in specific industry groups, there have

also been studies in political economy, tracing the growth of big business and nature of monopoly capital and its effects on the overall functioning of the economy.

In the West, most studies were concerned with trends in aggregate concentration. A pioneering study in this area by Berle & Means (1932) which covered a period of 20 years (1909-29) in the U.S. economy, showed that there was a steady rise in the share of 200 largest non-financial corporations. This study was supplemented by Bain's study (1970) of the share of largest 100 firms for the period 1954-66. He found a sharp rise from 23 percent to 30 percent between 1947 and 1954, and again an increase to 33 percent by 1963. Similar studies done for other advanced capitalist countries like France and Britain too revealed a general rise in concentration over the years.

There are also a set of studies based on industrial organisation theory, examining the relationship between market structure and performance. Price-cost margins and profitability differentials formed a major chunk of analyses carried out in this area. Bain (1951) found varying profit rates in different market structures. Mann (1966) analysed the rates of return in 30 industries (1950-60) and found the average profitability to be higher in highly concentrated industries than in that more competitive markets. However, the relationship between aggregate and industry-wise concentration has not been adequately studied so far.

Though Marx had observed tendencies towards concentration of capital as capitalism progresses, the shift in the nature of competitive capital towards monopoly capital was described at length by Lenin (1948). Sweezy and Baran (1966) had analysed the nature of monopoly capital in America and related it to the growth of military and the advertising industry. Hilferding has studied the nexus between banks, i.e., finance capital and industrial capital in the age of the corporate sector (1981).

In India, the first and one of the most comprehensive analyses of the private corporate sector was carried out by R.K. Hazari in the early sixties(1967). He formulated the concept of business houses and complexes. He identified 2 categories (1) the Inner Circle - where the firms were under effective control of the house and (2) the Outer Circle - where the business house exerted an influence on the company's affairs, but not the ultimate control. Firms with less than 50% of the equity held by the business house fell under this category. He gave a list of the top 20 of such business houses and their share capital as a percentage of the total share capital of the private corporate sector. He also noted the different methods adopted by these houses to maintain their power. In fact, it was this work that initiated the government enquiries into concentration and licensing which have been discussed in detail in the following chapter.

S.K. Goyal (1979), has traced some of the changes that had taken place since Hazari's study. More importantly, he has

pointed out the crucial difference in the nature of and use of power that control of economic resources brings; between business and economic power. Other than control over specific industries which can be equated with business power, by virtue of their control over vast sections of the economy, they would be in a position to influence the policy decisions of the state. Hence, despite government's regulatory policies, the Business groups not only have flourished, but also have forced changes in important policies over the years to facilitate their growth. It is in this context, that the character of the state in a democratic capitalist society has to be looked into. At one level, a veil of neutrality has to be maintained to appease different sections of the voting population, at the other, obviously, they have to cater to the needs of the economically powerful blocs to which they owe their sustenance and whose growth interests they represent. The passing of ostensibly anti-big business policies can be seen as its former function whereas the impotence of these measures can be seen as an inevitablity arising out of its true character.

More recently, N.K. Chandra (1979) studied the relative growth of the private corporate sector for the period 1931-76. This was an ambitious project in the sense that there was considerable ambiguity in the data available for different time periods. For one period, he has relied on Monopoly Inquiry Commission's (henceforth MIC) classification, for another, the Industrial Licensing Policy Inquiry Committee (henceforth ILPIC) categories and Hazari's for yet another. But, finally, he has settled for the ILPIC classification which seemed to be the best,

and made some adjustments to make the data comparable. He found a slight decline in the share of monopoly control in the total corporate sector assets and thereby conluded that monopoly capital in India was different from the advanced capitalist countries and resembled more of feudal monopolies.

Ajit Roy (1976) tried to prove that capitalism in India has come of age and that monopoly capitalism in India bears strong similarities to that in the West. The dependent nature of the economy and the persistence of feudal relations seems to have escaped his notice.

With regard to product concentration, there have been studies conducted in selected industries by Aurobindo Ghosh (1975), Vaidyanathan and Apte (1982), etc. These studies have tried to trace the underlying causes and concluded that government control did have a role to play in accentuating concentration. One of the most comprehensive studies subsequent to MIC's report is by Padmini Swaminathan (1982). She has also tried to relate structure with both conduct and performance of the industries simultaneously. Product-wise concentration for the period 1975-80, for a total of 51 product groups (17% of the total weight of industrial products) has been calculated and compared with MIC's findings. Of the total 51 products, the leading firms in 1964 were able to maintain/improve their share in 40 product groups. Of this, the degree of concentration has remained the same in 18 products, while it has increased in 11 product groups and decreased in the remaining 11 groups.

Hence, it was observed that, even with concentration declining in a number of industries, competition has not increased at all. This would mean that new producers have been producing only a minor share of the output posing little challenge to the market leader. The study also attempts to relate aggregate concentration with product concentration by analysing the changes in production shares of some of the products held by the big business houses.

Subsequent to the study by Padmini Swaminathan, no comprehensive study has been carried out in this area, though, there has been a series of government policy changes that sought to alter the industrial structure in a big way, since the late seventies. This set of measures was aimed at improving competitiveness in the Indian industry by relaxing the controls on big business, licensing procedures, etc and opening up of the economy to external competition. The present study seeks to trace the changes in an important aspect of market structure, namely, concentration, during the period of policy changes biased towards the play of market forces instead of the planning process.

Objective of the Study:

To be more specific, study traces the changes in industrial concentration levels for the period 1978-79 to 1990-91 at a disaggregate level for about 110 industries. Further, it also examines the impact of the policy changes on the growth of aggregate concentration, ie, the growth of big business houses. Finally, the association between market structure and

innovativeness during this period of liberalisation has been examined. These exercises hopefully, would indicate the potential of the these policy measures in achieving the goals set by the proponents of these measures in making the Indian industry competitive in structure and dynamic in growth.

Methodology

Concentration measurement involves two components. (1). The choice of a proper physical measure (What is to be measured?) and (2). The choice of a proper method or index that reflects monopoly power most accurately (How is it to be measured?). These two aspects are discussed below.

The measures of concentration basically relate to the size distribution of firms. But there are many indicators of firm size, namely, assets, value added, output, sales and employment. Each indicator is beset with problems. Assets are a natural measure of economic power, but then valuation depends on accounting conventions which vary across different industries. The choice of employment would understate the concentration levels of capital-intensive firms. Net value added, (i.e. sales revenue less the cost of inputs), is an ideal measure, but data is difficult to obtain and it includes in it the level of vertical integration of a firm which would overstate its concentration level in a particular product market. Sales figures would be biased towards firms engaged in distribution and not production and again towards firms which perform only assembly operations. But still, it would be a fairly accurate

measure for comparing firms within an industry or for comparing average concentration levels across markets. But various studies have shown a strong correlation among these measures. According to Rosenbluth (1959, p:92),"....concentration measures in terms of fixed assets exceeds output concentration,which in turn exceeds employment concentration; the ordering of industries is always the same". Another study by Mueller,[4] indicates that concentration measures based on sales data seems to be the least while net income after taxes gives the highest level of concentration as compared with other measures.

The next problem arises from the definition of markets. What constitutes a product market is decided arbitrarily. The confusion comes out of using demand side or supply side characteristics to define a market or industry. Adoption of demand side criteria would lead to firms manufacturing products that are close substitutes for the consumer, i.e. which have high cross elasticities of demand, getting grouped into a single market. On the other hand, when one uses the supply side criteria, then firms that use up similar inputs or use a similar technical process would fall under a single market. Both kinds of classifications are not strictly comparable. For instance, a lot of plastic and steel products are close substitutes (steel pipes for instance, are increasingly being replaced by PVC pipes and tubes), but supply side definition would group them into different markets. But this definition would be correct if firms using similar inputs are in a position to produce each others products and thereby influence their behaviour.

This confusion has led scholars like Brunner (1975) and Nightingale (1978) to clearly distinguish industries from markets. Industries would satisfy the supply side criteria whereas markets would confirm to the demand side criteria. Though this distinction does not solve measurement problems, it helps to avoid using data on industry to draw conclusions about the market.

Another difficulty is with the level of disaggregation. At a highly aggregate level, there can be a market for transport equipment. Within that, one can have a light commercial vehicles' market and then a market for cars and then within the cars' market, one can have different cars for different segments which the consumers do not perceive to be substitutable. The higher the level of disaggregation, the higher would be the concentration levels.

Regional concentration is another aspect which has to be taken into account. This is a crucial dimension especially for a geographically large economy like India because the huge transportation costs involved virtually rules out the possibility of a firm selling goods produced in one part of the country in another corner. This leaves a lot of scope for the formation of segmented markets and regional monopolies[5]. Though a firm's share maybe insignificant in the total market, they would enjoy a monopoly power in that particular local market.

The choice of a specific index as a measure of concentration is an important element of a statistical analysis

of this nature. To begin with there are indices based on theoretical premises. The difference between price and marginal cost divided by price would reveal the extent of deviation from perfect competition. The use of cross-elasticities of demand was also proposed. But they are plagued with lots of practical difficulties. Information on cost is not readily available and estimation requires solving complex systems of demand equations.

To overcome the problems with theoretical measures, indices that refer to the size distribution of firms have been developed. Hannah and Kay (1977) have listed a set of axioms that a concentration index ought to fulfill.

> (i) An increase in the cumulative share of the Ith firm, for all i ranking firms 1,2, ...i....N in descending order of size, implies an increase in concentration.
>
> (ii) The principle of transfers should hold good i.e. concentration should increase if the share of any firm is increased at the expense of a smaller firm.
>
> (iii) The entry of new firms below some arbitrary significant size should reduce concentration.
>
> (iv) Mergers should increase concentration
>
> (v) Random brand switching by consumers should reduce concentration
>
> (vi) If Sj is the share of new firm, then as it becomes progressively smaller so should its effect on a concentration index.
>
> (vii) Random factors in the growth of firms should increase concentration.

However, there has been some debate regarding the 4th axiom. Stigler (1950) and Hart (1975) have argued that mergers might reduce concentration when smaller firms merge, thereby posing greater competition to the top firms. However, no concentration

measure can capture all the aspects of market behaviour.

The most commonly used index is the K- firm concentration ratio, defined as the cumulative share of the Kth firm. Its popularity is mainly due to the easy availability of data and ease of computation. The choice of K is of course, arbitrary. Conventionally, in the developed economies, for market concentration, `K' takes on values between 3 and 8, while for aggregate concentration, `K' is set equal to 100. The choice of `K' should be done with some care as a drawback with this measure is that it does not disclose any information on firms ranked after `K'.

Another common index, and a more comprehensive one is the Hirschman-Herfindal index. It is defined as sum of the squared shares of `n' firms. The advantage is that it takes into account the shares of all the firms in the market. At the same time, the squaring up of the values means that the smaller firms contribute less than proportionately to the value of the index. This is a valid approach as the entry of a number of small firms with miniscule market shares would hardly affect the market power of the top firms. But this index requires information on the market shares of all firms which resticts its use.

However, all these indices are static in nature and do not capture the movements in concentration levels and the way the top firms keep changing their ranks over the years. This is an obvious defect as the intensity of competition depends largely upon the ability of the top firms to maintain their positions.

Therefore, these indices should be supplemented by information on turnover rates.

Data Sources

The statistical exercises carried out in the present study are based upon five types of data sources. Data for aggregate concentration are taken from various issues of Company News and Notes, Assocham Parliamentary Digest and monthly Bulletins of the Reserve Bank of India. The former two sources give information on the assets of the top twenty Business Houses while the RBI Bulletins carry results of survey of large and medium sized non-governmental, non-financial companies.

The Centre for Monitoring Indian Economy (CMIE) publishes periodically, data on market shares of selected products. The first volume was prepared for the year 1978-79 and this suits our purpose well as it coincides with the beginning of the liberalisation phase. To recall, the main aim of the study is to trace the changes in concentration during a period of relaxation in policy. Since then, data for five more years have been published, but at disparate time points. The information pertain to sales data for different firms in each product category. Analysis of diaggregate concentration is based solely on this. Data on R & D expenditure is obtained from various issues of "R & D Statistics" published by the Department of Science and Technology, Government of India.

Limitations:

Since only sales data are available comparison with results of the MIC report becomes difficult as that is based on production data. The CMIE data confirms largely to the 3-digit classification used by the Annual Survey of Industries(ASI) and hence also sets limits to the level of disaggregation possible. This level is much lower than the MIC classification which makes it virtually impossible to relate the two studies.

Since 1978-79 has to be taken as the starting point, only those products which figure in that volume can be taken. And there are also several gaps as data on specific products are not available for some years. Another major limitation is that the coverage of firms is quite varied. Consequently, wherever there was a glaring discrepancy between the data pertaining to a particular year and data for adjacent years, they have been omitted. Data for atleast three times points was considered essential for making any meaningful comparison with other products.

Organisation of the Study:

The study is divided into six chapters. The current chapter introduces the concept, states the importance of this study, outlines the various approaches taken, reviews some of the studies and also discusses some of the methodological issues involved and names the data sources. The next chapter traces the evolution of the government policy framework with respect to the

Indian industrial structure, with special emphasis on the private corporate sector. The changes in structure has been related to the government policy changes over that period. Chapter 3 deals with the changes in aggregate concentration while chapter 4 goes on to trace concentration changes at the product market level. In Chapter 5, the association between market structure,ie, concentration and technical progress in Indian industry has been studied. Chapter 6 draws together the important results of this exercise.

Notes and References

1. These points are discussed elaborately in Sam Aaranovitch and Ron Smith (1989)

2. Marx's treatment of changes in concentration in a capitalist economy has been elucidated in Karl Kuehne (1979)

3. Both the quote from Roseenbluth and Mueller's study are taken from Padmini Swaminathan (1982, pp. 29)

4. A study by Joseph K.J (1992) points to the existence of such regional market segmentation in India in the television industry.

CHAPTER II

GOVERNMENT POLICY FRAMEWORK

In the earlier chapter, the possible modes of government intervention in production and distribution of goods were briefly mentioned. This chapter is devoted to tracing the evolution of government policy with respect to Indian industrial structure. Initially, the origins of modern industry and the colonial policies that influenced their development has been discussed. This is followed by a review of policy measures taken in the post-colonial period. Lastly, some of the factors responsible for the recent policy changes and the nature of these changes are examined.

Origins of Modern Indian Industry:

The growth of modern business in India owed its origins to the colonial rule. Around the eighteen fifties, commercialisation of agriculture brought in its wake, cultivation of cash crops like cotton, jute, tea, etc. Trading in these commodities was a profitable activity though there was a strict division of labour between local and British traders. Foreign trade was purely under the auspices of British capital whereas its supplementary activities like financing and tarnsport of goods to the ports along with trading within the economy, was taken care of by Indian middlemen traditionally belonging to trading communities.

The American Civil War in the eighteen seventies cut off an important source of raw cotton supply and this enabled other countries including India, to intensify the cultivation of cotton. Claude Markovits (1985), in tracing the rise of the corporate sector, cites the accumulated cotton, trading surplus, the zeal of the English textile machinery manufacturers in selling the machinery in the colonies, cheap labour and the huge market for yarn in India and China as the factors responsible for the growth of textile industry in India. Jute industry originated in Bengal, solely initiated by the British. The infrastructural requirements for trading like transport and communication, enabled the growth of railways. The modern iron and steel industry was an offshoot of this. Sugar mills (white sugar) were started roughly around the eighteen fifties while construction work warranted the growth of cement industry[1].

Though the Indian businessmen depended on the colonial rule for their supply of raw materials and technicians, their growing wealth and their search for profitable outlets at times brought them in conflict with British interests. After World War 1, the British government too realised the problems of having a weak industrial base in India. Other strategic interests like keeping away the powerful trading class from the growing nationalist movement created a favourable disposition towards creating an industrial base. This period witnessed diversification of several busineess groups into different industrial activities[2].

However, the setting up of the industries required huge amount of capital, technical know how and managerial skills. In view of these entry barriers, the investment of Indian capital was insignificant in all the major industries other than the textile industry. Morris D. Morris (1984) attributes the entry of Indian capital into textile industry to the lower economies of scale and of diffusion of production all over the country. But, on the whole, the Indian industry was marked by a high degree of concentration.

TABLE:1

Top Business Groups in India in 1931.

Name of the Group	Nationality	Total Assets (Rs.'000)
1. Tata	Indian	501,900
2. Andrew Yule	British	102,200
3. Inchcape	"	113,300
4. Finlay	"	30,500
5. E.D. Sassoon	"	75,100
6. Bird	"	103,400
7. Martin Burn	"	74,700
8. Killick	"	41,900
9. BIC	"	20,500
10.Gillanders	"	16,300
11.Begg	"	49,200
12.Duncan	"	22,200
13.O.Steel	"	8,700
14.BAT	"	-
15.MacLeod	"	23,600
16.Currimbhoy	India	64,400
17.Jardine	Britih	48,900
18.Harrisons	"	-
19.Shaw	"	12,200
20.Bengal Iron	"	43,500

SOURCE: Markovits Claude, Indian Business and Nationalist Politics, 1931-39, Cambridge South Asian Studies Series, Orient Longman, Hyderabad, 1985, p.190.

For a long time, the jute industry was dominated by 4 or 5 British groups, paper industry by 2 firms, cement by 3 of

them, etc. Another important factor which aided concentration was the Managing Agency system, which enabled a single firm to exert control over the management of a large number of firms (Blair King, 1966). Hence, there was substantial divorce of ownership from control. Tables 1 and 2 show the major business groups and the dominance of British firms in all the industries (except textile) for the period 1931-39. The power of British capital, according to Michael Kidron (1965, p:10), "lay ... in organisation.. its self sufficiency, its integrated and articulated character and in its being able to draft in outside resources in men, money and markets".

TABLE-2

Distribution of Companies under control of major Indian and British Groups in 1931.

Sector	Indian Groups	British Groups
Cotton Textiles	64	33
Jute Textiles	5	50
Other Textiles	-	3
Sugar	1	11
Iron, Steel,Engineering	2	26
Transport	5	34
Elect. Generation	6	26
Cement,Lime,Ceramics	7	8
Paper	-	3
Chemicals	5	5
Coal mining	16	73
Other mining	-	10
Tea planting	-	313
Insurance	5	2
Investment, finance	15	73
Trading	7	9
Estate,land,building	3	5
Other sectors	31	103
All sectors	172	787

SOURCE: Same as Table:No:1, p. 199.

Around the beginning of World War I, with the backing of the growing nationalist movement, the Indian bourgeoisie managed to wrest some concessions from the imperial government like protection in selected industries, assured markets, etc. This helped them to forge a steady growth which further accelerated during the II World War through trade[3].

But the growth had to take place within the colonial relations of power and was mostly subservient to the larger imperial needs and dependent by nature. Without adequate growth in the home market and mainly supported by import substitution, the process failed to have much of the linkage effects usually associated with industrialisation.

On the whole, the colonial period was a period of near stagnation. There wasn't much of a change in the structure of production or productivity levels. The growth of modern manufacturing was, to a large extent, neutralised by the displacement of traditional crafts. Thus, though there was industrial production along capitalist lines, the economy was basically agrarian, dominated by feudal relations, with more than 85 per cent of the population in villages. Capital formation was low (6 per cent of NDP) but, owing to the spurt in a trade in the 1930s and 40s,there was a foreign trade surplus at the time of India's political independence (Vaidhyanathan, 1984).

Government Policy in The Post Colonial Period: 1948-1969

The disastrous effects of the depression forced the capitalist world to confront the contradictions inherent in the system. A need to create institutional changes to enable stable capitalist development was felt. Keynesian theory established the need for state intervention not only in fiscal and monetary affairs, but also to participate in the production process in certain spheres. The urgency of reform was also enhanced by the socialist alternative that had become a real threat with the Soviet Union having come out unscathed from the depression. It was in this context that the new Indian government's policies were framed.

Despite the accumulations made through wartime trade and industry, the Indian capitalist class was still insecure. Even if political independence was achieved, Indian capital was too weak to face foreign competition. Moreover, they needed state help to build a strong infrastructure to initiate a process of industrialisation[4].

Given these conditions, it was necessary to chalk out a plan of development with a vital role assigned to the state to bolster up a backward capitalism and equip it to withstand the pressures of foreign competition. Even earlier, Indian industry had enjoyed a certain amount of protection from foreign competition and so, the capitalist class needed continued sheltering.

It was also felt that too much concentration of wealth would lead to a restriction of the domestic market. A more equitable distribution of income would increase purchasing power and thereby the effective demand, giving a boost to industrial production. The Bombay Plan, formulated by a group of leading businessmen, for instance, observed that "the large increase in production which is postulated in the plan will be difficult to achieve if the present disparities in income are allowed to persist" (Thakurdas, 1944, p: 2).

The industrial policy formulated by the new government, which had a lot of parallels with the Bombay Plan meant to encourage private initiative in production and ensure a certain amount of equity in distribution.

Article 39 of the Directive Principles of State Policy in the Constitution of India states.....

> " b) That the ownership and control of the natural resources of the community are distributed as best to subserve the common good.
>
> c) That the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment".

According to Bardhan (1984, p:40), "The industrial capitalist class, mainly under the leadership of some of the top business houses from Western India supported the government

policy of encouraging import substituting regime, quantitative trade restrictions providing protected domestic market and of running a large public sector to provide capital goods,intermediates and infrastructural facilities for private industry often at artificially low prices."

An Economic Programme Committee of the All-India Congress was set up immediately after independence. The Industrial Policy Resolution of 1948 adopted most of its recommendations. It was this resolution that shaped the future of Indian industry.

A major role was envisaged for the public sector. It was entrusted with the task of developing the economic infrastructure like transport, communication, etc. and taking over of key basic industries, the development of which would make private investment more productive and profitable. Private initiative was sought to be directed towards socially desirable channels through regulative mechanisms. Setting up of financial institutions by the state for mobilising capital for industrial investment was also proposed.

But growth was not meant to take place at the expense of equity. Traditional small-scale manufacturing absorbed a large proportion of industrial labour and hence, some kind of protection from big business was essential as it would result in massive displacement of labour if allowed to perish. Special measures were recommended for development of backward areas. The then Ministry of Industry and Supply, during the discussion

in the Constituent Assembly (Legislative) on Industrial Policy Resolution(IPR), stressed that increased production should not "lead towards accumulation of wealth in the hands of a handful of persons or great monopolists" (ILPIC Report, p:24). The instrument of taxation was to be used to ensure an equitable distribution of income. As good sources of employment, development of co-operative enterprises and small scale industries was to be encouraged by restricting the volume of production of large scale enterprise, differential taxation and direct subsidies.

The Industries (Development & Control) Bill was introduced in the Legislature in 1949 to vest the government with necessary powers for regulation and control of existing and future undertakings. Some of the important provisions were (ILPIC Report, p:27):

> (i) All the existing industrial undertakings in the scheduled industries had to be registered with government within a prescribed period.
>
> (ii) No new unit could be started or expansion of existing capacity made without a licence.
>
> (iii) Government could order an investigation in respect of any scheduled industry or undertaking if, in its opinion, there had been or was likely to be an unjustifiable fall in the volume of production in the industry or undertaking, or if there was a marked deterioration in quality or an increase in price for which there is no justification; similar investigations could also be ordered in respect of any industrial undertaking being managed in a manner likely to cause serious injury or damage to consumers.

Licences were to be obtained for new undertakings, substantial expansion, manufacture of new articles, shifting of location of industry and for concerns without registration certificate for

continuing the business. The IPR was revised in 1956 to give a much greater role for the public sector both by way of direct investment and of regulating the private sector.

The first of the Five Year Plans was essentially a continuation of Post War reconstruction programme[5]. The Second Plan, based on the Mahalonobis Model, had a clear cut development strategy and considered reduction of inequality in income and a more even distribution of economic power as one of its primary objectives. Emphasis was laid on the domestic production of metals and machinery, especially the capital goods sector. As mentioned earlier, machinery and materials had to be imported for launching off an industrialisation drive. Given the comfortable foreign exchange reserves in the early nineteen fifties, there was a binge of liberal importing, despite stagnation of exports. However, exports did not figure in any significant role in the developmental plan.

The sharp deterioration in the balance of payments position in the late nineteen fifties, mainly due to the earlier liberal import policy forced the tightening up of import controls. Given the stress laid on basic and capital goods industries, in general, production of capital equipment and intermediate products expanded much faster than consumer goods industries. If this kind of industrial growth is to serve as a base for economic take-off, there has to be complementary changes in the structure of demand. To increase effective demand in a country whose major section of the population depends on agriculture for livelihood, effective implementation of land

reforms is absolutely essential. Though there were provisions in the Constitution for substantial land reforms in the agrarian sector, it was never carried out to any great degree of success. Thus, though growth was taking place in certain sectors, the increasing income failed to trickle down and the standard of living of large sections of the populace continued to be low.

Owing to pressures from certain sections of the Opposition, the Planning Commission appointed a Committee under the chairmanship of Professor P.C. Mahalanobis to enquire into the nature of distribution of the income generated in the post-independence period. Submitting its report in February 1964, the committee observed that planning has contributed to growth of big companies and monopolies in Indian industry. This phenomenon, it felt, had been in fact assisted by financial institutions like the Industrial Finance Corporation, National Industrial Development Corporation, etc. The use of industrial licensing as an instrument for preventing industrial monopolies was also proposed. The committee also emphasised the need for more comprehensive information regarding the ramifications of economic power to formulate an appropriate policy. Hence, the Monopolies Inquiry Commission was constituted in 1964 to "inquire into the existence and effect of concentration of economic power in private hands"(MIC, p:1).

The Commission (MIC) sought to examine both product-wise and country-wide concentration. For studying product-wise concentration, the 3 firm concentration ratio, ie, ratio of the share of the top 3 firms to the total sales or production was

used. The classification was made as follows. When the share of the three top producers was 75 per cent or more, it was considered to be highly concentrated. Concentration was medium when their share was more than 60 per cent, but less than 75 per cent. When the share of the three top enterprises is between 50 per cent and 60 per cent, it was low. However, the data source on which the study was based (production data from Directorate General of Technical Development (DGTD)), had some limitations. For instance, a number of firms engaged in production of certain commodities were not registered at all. This was especially true of firms in the small scale sector like leather and leather products, toilet articles like tooth paste, etc. And the industries where the public sector firms happened to be the dominant producer were not segregated. Obviously, it would have different policy implications from that of the private sector.

The products were classified under 20 industry groups by the DGTD. Of the 1298 products studied by the MIC, 1131 (87 per cent) revealed high concentration. In about 72 per cent of the products, the entire production was taken care of by the three top producers. In fact, there was only one manufacturer in 426 of these industries.

For ascertaining country-wide concentration, a list of major industrial houses believed to control a large number of firms was prepared, based on data from Dr. R.K. Hazari's study (1967) and the research wing of the Company Law Board. The list of companies believed to be held by each business house was send to them for correction.

Then the share structure, constitution of Board of Directorate etc. was studied. Where 50 per cent or more of the equity was owned by an industrialist or his relatives, the company was considered to be under his control. The holdings of a company under the control of a business house was also taken to be the holding of that house. Thus, "where Company A and Company B were found to hold more than 50 per cent equity of Company C and business house X was found to have control of Company A and B, Company C has also been held to be under the control of business house X" (Nirmal Chandra,1979, p:1249).

Companies using the same insignia of a house were considered to be held by the house. Subsidiaries of foreign companies were excluded. And whenever a company was jointly controlled by more than one group, it was excluded from any of these groups. And all banks were left out of the study. Hazari's Outer Circle concerns too were not considered.

Out of 2259 companies examined, 650 were not listed due to lack of evidence. A total of 75 business groups having assets more than Rs.5 crores was presented. The Commission also listed some of the monopolistic and restrictive practices indulged in by these companies like preventing competition, price fixation, exclusive dealership, hoarding at the time of scarcity and even output restriction in one case. The committee also drew attention to the fact that the big business had an advantage over small entrepreneurs in obtaining licence and in securing assistance from banks and other financial institutions which

proved to be a major factor that aided concentration. Other possible factors cited were:

> 1) When a pioneering firm ventures into the production of a new commodity, it generally happens that for some time atleast, it is the only producer.
>
> 2) Difficulty of meeting the initial capital requirements
> 3) The necessity of obtaining an industrial licence.
>
> 4) Existence of a limited market and the economies of scale.

In continuation of the debate on this finding, the Industrial Development Ministry appointed the "Industrial Licensing Policy Inquiry Committee" (ILPIC) in 1967 to inquire into the workings of the licensing system during the period 1956-1966. The objectives of the committee were (ILPIC Report, p:4):

> "i) To ascertain whether the large business houses have secured undue advantage over other applicants in the issue of licence.
>
> ii) The extent to which licensing has directed growth in the required manner with regard to regional dispersal, growth of small and medium scale industries, import substitution, etc.
>
> iii) To assess to what extent, the Large Business Houses (LBHs) have utilised licensing and whether it has resulted in preemption of capacity.
>
> iv) The role played by financial institutions in accentuating concentration" (ILPIC Report, p:4).

Though the ILPIC studied only the top twenty houses listed by the MIC, the analysis was a lot more detailed. It included Hazari's `outer circle' concerns , under the grouping 'second-tier' firms. For establishing house affiliation, the ILPIC used additional criteria like shares held by senior employers of a house, use of common office premises, telephone, etc. Substantial shares of many firms were held by public

financial institutions, the state and Central governments which would normally not exert any control over these firms. Owning atleast one-third of rest of the equity was considered sufficient for exercising control. Banks and branches of foreign firms were also subject to scrutiny.

As the ILPIC criteria was more broad-based, a greater number of firms fell within the domain of control of the 20 houses. Forty-six additional firms were reported along with 70 non-banking firms in the second tier. Eight banks were also included. It also came out with a list of large independent companies, Indian subsidiaries and branches of foreign companies.

They concluded that the licensing system had in fact worked to the advantage of large business houses, in that, by obtaining licenses they were able to pre-empt entry and maintain their monopoly positions. Data was furnished to prove that a greater proportion of licences were given to firms belonging to the business houses. Moreover, these houses had also extended their control over financial resources by cornering a major portion of the loans sanctioned by public financial institutions. It was also felt that, licensing as a mechanism to curb concentration of economic power would be quite ineffective and called for the introduction of a legislation along the lines prescribed by the MIC.

The MRTP Act, 1969:

The circumstances under which the anti- monopolies legislation was passed has been well documented (Paranjape, 1986). The Monopolies and Restrictive Trade Practices Act, brought into effect from 1970, was meant to curb both aggregate and product-wise concentration. This was to be done through controlling the issue of licences to big houses, enquiries into restrictive and later on, unfair trade practices, etc. Measures relating to concentration would apply to two kinds of undertakings.

> (i) An undertaking, which alone or together with other interconnected (I-C) holdings, owns a minimum of Rs.20 crores (subsequently amended to Rs.100 crores) in assets. They might operate in the same or different lines of business.
>
> (ii) A dominant undertaking (DU) whose assets including those I-C undertaking constituting the dominant undertaking are not less than one crore rupees and (b) which either by itself or along with I-C undertakings, supplied at least one-third of goods or services within India as a whole or a substantial part thereof.

Importance was laid on interconnections among the undertakings. However, it was not devoid of loopholes. Though, vesting an independent commission with ultimate authority to regulate these measures would be the most effective, the Act placed this authority on the Government. Only if the Government deems fit to pass on the complaints to the Commission, can they take action. Moreover, action would be taken only if it was found that concentration was detrimental to public interest. Criteria for public interest to be considered were production, distribution and supply by most efficient means, encouraging new enterprises as a countervailing force, reduction in regional disparity, etc

(Nirmal Chandra, 1977). But this was to be investigated only on receiving complaints for enquiry. A surveillance of the LBHs and DUs was to be carried on through enforcing government permission for substantial expansion, for starting a new undertaking, merger, amalgamation or takeover. The Government also issued a classification of goods/products which was meant to gauge the extent of concentration prevailing in each of these categories. This classification was too broad and a lot of firms that would have been dominant under a more disaggregate level were left intact. Even restrictive trade practices were to be permitted if their removal might cause rise in unemployment in that area, fall in exports, reduction in bargaining power of contracting parties, etc.

The functioning of the MRTP Act has been widely discussed and criticised (Nirmal Chandra, 1977). Very few complaints were really passed on to the commission for enquiry and the rest were decided by the government itself. The problem of establishing interconnections was never adequately dealt with. The Report of the High Powered Expert Committee on Companies & MRTP Acts, 1978, with limited data, has proved that concentration has increased in the subsequent years. J.P.S. Uppal (1986), in continuation of the ILPIC investigation of the role of public financial institutions in accentuating concentration, has shown that it has not diminished at all over the years.

Thus, the government controls appear to have failed to curb the growth of monopolies. Apart from its inability to achieve its objectives, it was also believed that they have

contributed to inefficiency in production. It is in this context that the policy changes gain significance.

Policy Changes since 1978/79:

The new phase oriented towards liberalisation in government policy which commenced in the late seventies should be seen as a response to this crisis. A series of policy measures were taken which sought to reduce controls both in the domestic and external fronts. De-licencing, broadbanding and liberalisation of imports were introduced in several industries. More and more capital goods were brought under the Open General Licence (OGL) category facilitating greater imports. Beginning from the late seventies, there was a gradual shift from a regulatory regime to an atmosphere of internal and external liberalisation. This liberalisation trend was further enhanced in quick succession from 1985 onwards and culminated with the New Industrial policy of 1991. In the following chapters, the impact of these measures and therefore the effectiveness of these policies are examined.

Notes and References

1. For details on the origins of different modern industries see Bagchi A K (1975a)

2. The nature and extent of diversification by various business groups during the nineteen twenties and thirties have been documented in Markovits. C (1985)

3. The various factors that contributed to the growth of Indian business during the War period (II World War) have been detailed in Markovits. C (1985) and Morris, D Morris (1984)

4. For an overview of the context and the factors that influenced the beginnings of Indian Planning, see Mukherji. A (1976)

5. The link between the post 1947 economic planning and the state policies during the colonial period has been dealt at length by Hazari R.K. (1986)

CHAPTER III

TRENDS IN AGGREGATE CONCENTRATION

This chapter traces the trends in aggregate concentration. In particular, it maps out the changes in levels of concentration after the process of policy liberalisation was initiated. The objective is to look at the effects of liberalisation on the process of cocentration of economic power in the mirror image of changes in industrial concentration. A closer look at the kind of liberalisation measures taken during the seventies and eighties but, is necessary before an analysis of their effects on industrial structure is undertaken.

It was believed in general that the regulatory policies, established as instruments to achieve economic growth with social equity and to broaden the entrepreneurial base, had increasingly led to suboptimal allocation of resources, high cost structures and enabled firms to appropriate monopoly rents in sheltered markets. The artificially erected barriers to entry not only limited the extent of competititiveness but also contributed to structural deficiencies in the industrial sector like plants of uneconomic size, inefficiently specialised firms, etc. Firms were forced to diversify into lines of activity totally divorced from their earlier operations leading to inefficiency. The sector was also protected from external competition. Restriction on imports and regulation of collaboration agreements meant that those firms that secured an agreement first could enjoy monopoly

control over that technology and thereby close off access to potential rivals.

Of the various factors cited for the industrial stagnation since the mid sixties and the early seventies, the all pervasive regulatory regime then in operation was felt to have had a significant role in dampening growth (Bhagawati and Desai, 1970, Ahluwalia,1985).

The regime was subject to criticism not only by proponents of a free market economy, but even by those ideologically close to planning as these policies proved to be ineffective in achieving its ojectives of curbing regional imbalances and concentration of economic power[1]. Thus, a need to overhaul the control mechanisms was acutely felt. It was as a response to this kind of criticism, and unhappiness expressed by big business over the bureaucratic controls, that the policy relaxation measures were undertaken.

The liberalisation process which gathered momentum in the mid eighties had its origins much earlier. H.K.Paranjape (1985) cites the licensing policy decisions of 1973 as the forerunner to the laterday changes. A study by the World Bank (1985) views the policy response to the First Oil Shock as the first step towards liberalisation. The study outlines three distinct phases in the liberalisation process.

1. Structural adjustment to the First Oil Shock -1973
2. Structural adjustment to the Second Oil Shock-1979

3. The post-1983 period which was characterised by an intensification of the changes in the earlier two periods.

The measures taken in this period were[2]:

a. Diversification facilities in several engg industries.

b. Recognition of capacity on the basis of modernisation,export performance,etc

c. Automatic expansion of capacity in selected engg industries and establishing new capacity on the basis of commercial utilisation of results of R & D.

d. Increased delicensing and higher investment limits for industrial licensing.

However, there continued to be some restrictions. Installation of additional machinery, fresh imports and borrowings from financial institutions, towards expansion was prohibited. The policy of reservation of certain industries exclusively for the small scale sector persisted.

The policy response to the second shock was also along similar lines. Excess capacity was regularised in 34 key industries. The scope for investment by firms under MRTPC/FERA was enlarged not only by a revision of the list of Appendix 1 of the IDRA, but also by granting automatic growth scheme to those already listed and to 45 new industries. But these measures continued to be circumscribed by the constraints mentioned above. New imports were to be matched by exports.

The post 1983 period was characterised by policies directed at specific industry groups instead of the 'broad brush' approach adopted earlier. In addition, there was a strengthening

of the earlier changes with regard to delicensing. A major feature of this period was the introduction of broad banding in selected industries.

Licenses were issued for a broad range of products replacing the narrow product-specific licensing in vogue since the early sixties, the rationale being that a set of products can be manufactured using similar inputs or processes, and hence, firms manufacturing one of them should be able to diversify into similar product lines ensuring greater flexibility in product mix and more responsiveness to changes in market demand. For example, the producers of commercial vehicles can diversify into production of passenger cars, scooter manufacturers into motorcycle production, etc.

Machine tool sector was the first to benefit from this policy(1983), soon followed by paper, non-electrical machinery, chemicals, pharmaceuticals, petrochemicals and automobile industries(1985).

With the policy statement of 1985, there was a further intensification of this process. The asset limit for registering under the MRTP Act was hiked from Rs.20 crores to Rs.100 crores. All the dominant undertakings falling under section 20(b) of the MRTP Act were exempted from obtaining licenses for producing products in which they were not classified as dominant. Most of the earlier restrictions on purchase of additional machinery for expansion and securing loans from financial institutions for additional capacity installation were done away with gradually.

From 1985, more industries were open to MRTP/FERA firms though there were restraints with respect to location, reservation for small scale sector,etc.

On the external front, this phase was marked by a shift from quantitative to financial controls along with a steady removal of licensing requirements. A number of capital and intermediary goods were brought under the Open General Licence category facilitating easier imports. Imports of machinery and raw materials was tied to export of a specific percentage of the firm's output[3].

From the above discussion, it is clear that whatever meagre policy checks on the growth of big business that were in force earlier have been to a large extent removed. Their unchecked expansion may not only conflict with the objective of establishing economic equity, but also poses a serious threat to democratic decision making. Hence, in the present scenario, where the state's role in controlling and directing investment and growth has been considerably reduced, the phenomenon of concentration of wealth in a few hands and the consequent power it entitles, becomes a matter of concern.

However, there were certain claims that it was these protectionist policies that helped accentuate concentration. The MRTP Act, passed earlier to curb these tendencies, had turned out to be a very diluted one not only in its working but even on paper. All that it effectively did was to delay the approval of applications for investment by the Large Business Houses.

The other criticism, directed at the very logic of the formulation of the Act, was along the following lines. Competition was sought to be improved by enabling the growth of new firms as a countervailing force to the existing monopolies. But, given the large economies of scale required for most products, effective competition to the already established monopolies can come only from equally big firms. This Act by creating higher barriers to entry for the larger firms prevented the other big firms from entering into these monopoly markets. It had led to the exclusion of those firms which alone had the 'financial power and technological resources' from competing for the monopoly market shares. Protected from external competition by high tariff barriers, the Act virtually sealed off the only other source of dynamism: the threat of potential entry[4].

The relaxation of controls would then have a two-fold effect. The Large Business Houses would face lesser barriers facilitating further expansion. This would also help them to gain access to the hitherto sheltered markets and thereby offer competition to the prevailing monopolies. The other possibility arises out of the fact that the barriers to entry of new firms created by existing monopoly firms by their easy access to licensing, pre-emption, etc have been diluted. Thus, the policy measures would promote the entry of new firms, making the market structure more competitive. From the nature of the policy changes, it is clear that a choice between economic efficiency and growth and equity and distributive justice has been made. The shift reflects a greater faith in the power of the market forces to set right the anomalies of planning. A freer play of

market forces, it is believed, would bring about growth and dynamism through greater competitiveness. In the ensuing chapters, an attempt has been made to examine some of these claims.

In this chapter, the growth of the LBHs in relation to the private corporate sector for the period 1970/71 to 1984/85 has been explored. But the full impact of these measures on the growth of the business groups are likely be felt only towards the late eighties, as the hike of the asset limit (which brought nearly 40 per cent of the MRTP firms out of the purview of the act), broad-banding, greater delicensing, etc were brought into effect only from the mid-eighties onwards. But lack of availability of data restrains the extension of the time period of analysis.

Methodology:

Studies on aggregate concentration in the developed economies have used the share of the top 100 or 200 firms in the total corporate sector as a measure of economy-wide concentration. However, in the Indian context, such a measure would be inappropriate as there are a number of firms in diversified activities under a central controlling authority, ie, the business house. The choice of the business house as an appropriate unit of corporate power was first made by R.K.Hazari (Hazari, 1967). Subsequent studies by the MIC and ILPIC too have adopted this measure though the criteria for placing a firm in the sphere of a business house has varied. This has also led to

problems with comparison of different studies. However, with the inception of the MRTP Commission, specific guidelines were drawn for this purpose. As there were no subsequent studies, from the beginning of the seventies, these criteria have been universally used. However, this is not bereft of problems. Chalapati Rao (1985) has highlighted the weakness of this criteria in establishing interconnections. But, since the published data on the details of the business houses use only the MRTPC standards, this study too has to adopt the same. This leads to a certain amount of inevitable underestimation as the firms left out in the numerator would figure in the denominator.

Data on these houses are published periodically in Company News & Notes and in Assocham Parliiamentary Digest as responses to unstarred questions in the Parliament. Data was not available for two years. The assets of the top 20 business houses have been taken for analysis in consonance with some of the earlier studies.

Calculation of the total private corporate sector assets is a bit complicated. Since no direct data is available, estimates have to be made. The composition of the private corporate sector based on the ASI classification is given in Appendix-1. The RBI publishes data collected from a sample survey of a) medium & large non-governmental public limited companies and b). Medium & large non-governmental private limited companies. The sample consists of firms whose paid-up capital is greater than Rs.5 lakhs. The coverage varies from year to year. The percentage of the paid up capital of the sample to the total

paid-up capital is given though it is not available for all the years. The Annual Report on the Workings and Administration of Companies Act published by the Department Of Company Affairs gives the combined paid-up capital of non-governmental public & private limited concerns.

To begin with, the paid-up capital of the RBI sample of private limited and public limited firms was added up. The ratio of this to the total paid-up capital was found. The inverse of this ratio was used as a blow-up factor to estimate the assets of the sample firms to get the total assets of all non-governmental private and public limited concerns. This is used as a proxy for the total corporate sector assets. This method makes an important assumption: ie, the ratio of the assets of the sample to the total is the same as the ratio of the paid-up capital of the sample to the total.

Results of Analysis:

Appedix-2 shows the names of the top 20 Large Business Houses (LBHs) and the value of their assets for the years 1970/71 to 1984/85 with a gap of two years (1973 and 1974). They show a steady increase throughout though the increase may partly be due to revaluation of assets.

A look at the way in which the relative rankings of the business houses have changed over the years and the size of house turnover from the top twenty ranks wuold indicate the intensity of competition among these groups. The Tatas and Birlas' groups

have monopolised the first two positions, with the Birlas slowly replacing the Tatas at the top. The next three positions were held by the Singhanias, Thapar and Mafatlal groups with their relative rankings fluctuating for the period 1975-84. The stranglehold of these groups was slackened by the Reliance group, which from a rank somewhere between 25 and 30 in 1978 had moved up steadily to the third position in 1987-88.

The other groups that had retained their place in the top twenty are Bangur, Sri Ram, ACC, L&T and Kirloskar. Most of the other groups have been moving in and out, and if the next five positions are also included, the turnover is almost negligible. The groups that had slowly been eliminated are Martin Burn, Esso and Parry in 1972, Bhiwandiwala from 1979 onwards, Oil India after a long period 1971-81 and Scindia from the next year. The only groups which had moved up from ranks below 30 are M.A. Chidambaram, Reliance and United Breweries.

To conclude, though there has been shuffling of positions, especially among the lower 10 houses, hardly any other group identified by the MRTP Commission had been able to move up into the top twenty slots. On the whole, the groups constituting the top twenty have remained more or less the same. Table-1 gives the turnover of groups from the top twenty ranks over these years. The turnover appears to have reduced in the post liberalisation period.

TABLE-1
Inter-temporal Changes in Composition of Top 20 LBHs.

Period-1	No:of LBHs moving out	Period-2	No:of LBHs moving out
1971-72	5	1980-81	2
1972-73	na	1981-82	2
1973-74	na	1982-83	1
1974-75	2	1983-84	0
1975-76	2	1984-85	1
1976-77	1	1985-86	na
1977-78	2	1986-87	na
1978-79	3	1987-88	2
1979-80	1	1988-89	0
TOTAL	16		8

SOURCE: Computed from Assocham Parliamentary Digest, Various Issues.

TABLE:2
Share of Top 20 LBHs in Total Private Corporate Sector Assets.
(Rs in Crores)

	Assets		
YEAR 1	Top 20 BHs 2	Total Pvt.Corp 3	(3/2) x 100
1971	305291	1113555	27.42
1972	314409	1229795	25.57
1973	na	1362650	na
1974	na	1601873	na
1975	460900	1923863	23.96
1976	495381	2116567	23.40
1977	540122	2227800	24.24
1978	580978	2510627	23.14
1979	660525	2771213	23.84
1980	759672	3207997	23.68
1981	894134	3596930	24.86
1982	1128413	4210112	26.80
1983	1337961	4835981	27.67
1984	1574480	5324623	29.57
1985	2013723	6274910	32.09

Note: `BHs'indicate Business Houses.
Source: Column 1: Company News and Notes, Assocham Parliamentary Digest, Various Issues.
Column 2: RBI Monthly Bulletins, Annual Report on the Workings and Administration of Companies Act, Various Issues.

To examine their stability or otherwise of control over assets, their share in the total private corporate sector assets was computed. Table-2 gives the details.

As the data for estimating total private corporate sector assets for the later years was not available, the analysis ends with 1984/85. But still the results are interesting. From 27.42 percent in 1971, it had declined slightly to 23-24 percent, after which it had remained stable til 1980. But as evident from the table, their share has steadily increased from 23.68 per cent in 1980 onwards to 32.07 per cent in 1985.

To study the changes in the proportion of assets among the top twenty groups, the share of the top two groups, ie, the Tatas and the Birlas were calculated.

TABLE:3
Relative Share of Tatas and Birlas in Assets of Top 20 LBHs (In Percent)

YEARS	RELATIVE SHARE
1971	39.27
1972	39.16
1973	na
1974	na
1975	39.69
1976	39.47
1977	39.61
1978	39.13
1979	39.66
1980	39.11
1981	39.50
1982	39.31
1983	41.13
1984	41.15
1985	38.79
1986	na
1987	na
1988	40.94
1989	40.08

Source: Same as Col:1 of Table 2.

As could be seen from Table-3 it had remained almost constant around 40% with the fluctuations slightly higher in the eighties.

Then the share of the ten prominent and stable houses in the assete of the twenty groups was examined. Having persisted around 50/51 per cent till 1983, it has risen gradually to 55.56 per cent by 1988 (Table 4).

TABLE:4
Share of 10 Prominent LBHs in Assets of Top 20 Houses.

YEARS	A	B	(A/B) x 100
1972	2296.0	4437.2	51.75
1975	3364.0	6492.4	51.81
1976	3601.1	6965.7	51.70
1977	3896.0	7584.2	51.37
1978	4195.1	8236.3	50.93
1979	4786.5	9352.3	51.18
1980	5599.6	10750.1	52.09
1981	6587.6	12816.0	51.40
1982	8228.3	15869.6	51.85
1983	9857.8	19018.9	51.83
1984	11650.5	22343.6	52.14
1985	15006.3	27966.9	53.66
1988	20825.0	37364.0	55.74

Note: A: Assets of Tata, Birla, Mafatlal, Singhania, Thapar, Bangur, Sriram, ACC, L & T and Kirloskar.
B: Assets of Top 20 Business Houses.
Source: Same as Table 3.

Conclusion:

The liberalisation policies have not only failed to curb concentration of economic power, but there are also sufficient grounds to believe that it has actually contributed to their increase. This can be seen from the fact that, not only has

total private corporate sector assets increased, but the top ten houses have also increased their share in the assets of top twenty business houses.

The shifting of ranks, especially among the lower ten, was not in the form of any of the lowly ranked firms moving into the top bracket. Therefore, barring minor shuffling of ranks, the groups at the top have managed to retain their relative positions. In fact, the size of the turnover has decreased in the post liberalisation phase implying greater stability of the Large Business Houses' positions. Hence, liberalisation has not really fostered competition within big business as anticipated. Instead, it has led to greater economic concentration by furthering the growth of houses already at the top.

This expansion of the houses at the top would lead one to expect that they have diversified into areas to which they had been denied access to earlier. This movement would affect the concentration levels in individual product markets. Hence, the next chapter deals with changes in concentration levels in specific industries.

Notes and References

1. For a compilation of the various strands of criticisms of the control regime, see Marathe. S.(1986)

2. Details of the various liberalisation measures in the first and second phases are given in the study by the World Bank (1985)

3. The changes in the post-1983 period are documented in the CMIE, February 1991.

4. This kind of criticism of the MRTP Act can be seen in Desai, A.V (1988), Frankena (1974). World Bank study on Indian Industrial Policy (1985), etc..

CHAPTER IV

INDUSTRY-WISE CONCENTRATION

As stated earlier, the changes in government policies since the close of the close of the seventies, marked by progressive relaxation of controls were intended to reduce the barriers to entry, thereby improve competition and make the industrial structure more cost-effective. To test the effectiveness of these policies in improving competition, an analysis of the trends in concentration changes in specific industry groups has been attempted in this chapter.

First, an outline of the methodology and nature of the data used has been given. Second, we deal at length with the changing trends observed in concentration levels of different industries.

Methodology:

As mentioned in the introductory chapter, a number of indices can be used to signify market power or concentration. But the choice is guided more by practical considerations like availability of data, ease of computation, etc than by accuracy. In the present study too, data availability happens to be the major constraint. It is based on the CMIE data on market and market shares for various industries which is available for 6 time points starting from 1978-79 and ending with 1990-91. This

is the only published data source on market shares for the eighties. The coverage of industries varies from year to year both in terms of number and the type of products included. For instance, the 1978-79 volume contains data for about 170 industries while the publication for the last year 1990-91 includes more than 300 product groups. Hence, 1978-79 has been taken as the base year and data on only these industries for the subsequent years have been taken for analysis. As a result, some of the new industries which had come up in the eighties may not be included in the study.

The installed capacity, production, sales(inclusive of excise duty) and market share(proportion of value of sales of the firm to the total sales in that product market) data of the major firms in each industry has been given. In industries where there are a number of firms, firm-wise data is not available for the lower ranking firms. Again the value of total output of a number of industry groups have not been mentioned. Hence, only sales can be used as a measure of concentration. The level of disaggregation in defining a product group is also limited by the disaggregation scheme of the CMIE data. This precludes the possibility of comparing this study with the findings of the MIC as that study uses production figures and the level of disaggregation is much greater.

The sales data of all the firms are not given and neither is the total number of firms in some industries. The computation of Hirschmann- Herfindal index, considered to be the most comprehensive index of market power, requires information on

both these aspects. So the next best measure and a widely used index, the K- firm concentration ratio has been used. Here 'k' takes the value of 'three' in consonance with some of the earlier studies. Essentially, changes in the values of 3-firm concentration ratios are taken to reflect changes in industrial concentration.

Discrepancies in the coverage of firms within each industry group has been observed in quite a few industries. This gets mirrored in the drastic changes in concentration levels between adjacent time points. On such instances, the data has not been considered for analysis. Data on at least three time points was deemed essential for drawing meaningful conclusions.

Analysis of Trends:

Table 1 gives an aggregate picture of variations in concentration levels over this 12 year period under study. 122 industries have been covered which account for roughly 64 per cent of the total value added in the Indian manufacturing sector. From an average of 63 per cent, the 3-firm concentration ratio

TABLE:1
Overall Concentration

YEARS	NO:OF PRODUCTS	AVERAGE CONCENTRATION
1978-79	135	63.0
1981-82	78	60.1
1983-84	103	62.4
1987-88	110	60.5
1989-90	112	60.0
1990-91	105	64.4

Source: Data on Market and Market Shares, CMIE, Various Issues.

has declined steadily but very marginally till 1989-90, but has again shot upto 64 per cent in the last year,ie., 1990-91. Looking at the number of industries that are highly concentrated (Table 2), it has been observed that 43.5 per cent of them had a concentration ratio greater than 75. It declined steadily to 36.61 per cent upto 1989-90, and then increased to 39.01 per cent in the last year.

TABLE:2
Relative Share of Products with CR > 75

YEARS	TOTAL NO	NO: WITH CR > 75	Percent
1978-79	135	59	43.7
1981-82	78	29	37.1
1983-84	103	41	39.8
1987-88	110	39	35.4
1989-90	112	41	36.6
1990-91	105	41	39.0

Note: CR : 3-firm Concentration Ratio.
Source: Same as Table 1.

But more than the concentration levels per se, it is the changes in these levels over this period, that is of primary importance. A clearer understanding of the nature of these variations calls for a greater disaggregation.

The products can be classified either by already existing categories or by using the pattern of concentration change as a basis for grouping. Usually, products are classified according to the nature of inputs that go into the production process or by the type of end users.

Input based classification:

The ASI has divided the entire manufacturing sector into 16 broad 2-digit groups based on the inputs used. Most of the product groups of the CMIE confirm to the ASI 3 digit classification and some of them, even at the 4 digit level. These groups have been aggregated again at the 2 digit level into 16 groups. Table 3 shows the concentration changes for each of these groups.

TABLE: 3
Trends in Industry-wise Concentration: (Input-based Classification)

NIC CODE	INDUSTRIES	3-FIRM CONCENTRATION RATIO					
		1978-79	1981-82	1983-84	1987-88	1989-90	1990-91
20	FOOD PDTS.	25.75	na	49.37	52.10	61.31	na
21:	FOOD PDTS.	38.05	23.90	24.55	58.15	50.10	55.50
22:	BEVERAGES, TOBACCO & PDTS.	69.57	78.30	62.20	62.97	68.67	56.03
23:	COTTON TEXTILES	6.50	7.80	11.04	2.60	5.15	5.95
25:	JUTE, HEMP & MESTA PDTS	11.40	19.00	20.60	13.70	13.50	18.80
27:	WOOD & WOOD PDTS.	82.99	na	17.20	na	32.10	59.40
28:	PAPER & PAPER PDTS.	91.75	25.40	98.55	73.28	76.03	68.17
29:	LEATHER & FUR PDTS	na	na	na	na	na	na
30:	RUBBER, PLASTIC, PETRM. & COAL PDTS	75.83	61.80	54.17	68.85	53.73	51.63
31:	CHEMICAL & CHEMICAL PDTS	64.72	74.87	62.28	54.87	55.16	60.24
32:	NON METALIC MINERAL PDTS	78.93	64.93	75.10	77.08	76.35	64.73
33:	BASIC METAL & ALLOYS	43.55	23.97	39.74	40.78	45.14	47.50
34:	METAL PDTS & PARTS	45.43	93.70	62.35	68.15	82.80	79.90
35:	MACHINERY & MACHINE TOOLS	59.95	58.60	60.56	65.46	65.30	73.47
36:	ELECTRICAL MACHINERY & APPLICANCES	55.35	54.08	63.28	52.77	55.79	55.44
37:	TRANSPORT EQUIPMENTS	85.73	76.81	86.40	83.90	91.08	90.67
38:	OTHER MANUFACTURING	77.47	87.80	83.70	45.73	62.35	73.05

Source: Same as Table: 1.

In some groups,(beverages, metal product and parts, for example) there are so few products that the availability or non-availability of data, discrepancy in coverage of even one industry affects the average concentration level drastically. For example, the Beverages,tobacco and tobacco products group shows a

decline, though concentration has decreased in one industry and remained stable in the other.

A decline was observed in the following industries.

1.Beverages,tobacco and tobacco products.

2. Wood and wood products

3. Paper and paper products group.

4. Rubber, plastic and petroleum products.

5. Chemical and chemical products.

Of these, other than the chemical products group, there are very few industries in each of these groups with the wood and wood products group consisting of only one industry. The chemicals and chemical products group which is the single largest group(28 products) shows a decreasing trend till the year 1989-90, but shoots up by five percent (55.15 per cent to 60.23 per cent) in the last year.

The following industries showed an increase in concentration.

1. Metal products and parts
2. Machinery and machine tools
3. Transport equipment
4. Jute,hemp and mesta products
5. Food and food products

Concentration remained almost stable in these industries

1. Cotton textiles.
2. Non-metallic mineral products.

3. Basic metals and alloys.

4. Electrical machinery, apparatus and appliances.

5. Other manufacturing.

Thus, predominantly concentration had either increased or remained stable. An interesting point is that the industries which had registered a decline in concentration ratio are largely process industries which normally enjoy significant scale economies. Of the industries, whose concentration levels had either increased or remained stable, there are a number of industries which were delicensed or belonging to the set of industries (Appendix 1, IDRA) opened to MRTP/FERA firms in the course of the liberalisation process. Therefore, the industries belonging to this set were isolated for study. Table-4 shows the concentration changes for this group.

TABLE-4
Concentration Trends in Industries
opened to MRTP/FERA Firms

Years	C.R
1978-79	65.1
1981-82	61.0
1983-84	64.0
1987-88	59.1
1989-90	60.5
1990-91	63.7

Note: CR: 3-firm Concentration Ratio
Source: Same as Table: 1.

It too reveals a pattern confirming to the changes at the aggregate level. A decline is observed till the last year during which concentration has again increased though the absolute levels are slightly lower. This seems to indicate that the

removal of controls has not really enhanced competition as was anticipated.

Use based classification:

Then the industries were classified on the basis of their use into capital, basic, intermediate, consumer durable and consumer non durable industries. Table-5 gives the concentration changes for these categories.

TABLE:5
Trends in Industrial Classification: (Use-based Classification)

YEARS	1978-79	1981-82	1983-84	1987-88	1989-90	1990-91
BASIC GOODS	57.0	42.5	51.2	48.3	48.6	50.0
CAPITAL GOODS	63.9	61.5	67.0	64.0	60.1	68.3
CONSUMER GOODS:						
DURABLES	71.0	63.9	70.3	73.0	71.2	74.2
NON-DURABLES	54.2	54.3	46.1	47.4	40.6	45.3
INTERMEDIATE GOODS	68.0	66.7	65.5	64.4	63.9	61.4

Source: Same as Table: 1

The intermediate industries show a gradual declining trend while the non-durable industry group reveals a decline and then an increase in the last year. For the basic goods industries, after a slight decrease, it has again increased marginally. The consumer goods and capital goods industries show marginal increases. Here, most of the intermediate group industries are chemical based industries and hence, process industries.

The next step carried out was to group the industries according to the manner in which the concentration ratios have moved. Products whose concentration showed an increase or

decrease or those which remained stable were grouped together. Tables- 6,7 & 8 list these categories.

Of the 122 products, concentration has declined in 43 industries(35.24 per cent). Among these 14 items belong to the 'chemical & chemical products' group, while 6 of them are in the 'machinery & machine tools'category. Again of the 43 products, in about 15 products, concentration has been declining till the late 80s, but has again begun to increase, especially in the last year (1990-91), though it has not reached the initial level. This is a very disturbing trend as it was only from 1983 onwards that the MRTP and FERA firms were exempted from obtaining licence for entry into many industries. Hence, one possible reason for this increase might be that these firms with their greater access to financial and economic resources and better marketing power have begun to establish themselves more firmly than they were able to under the former licensing regime. This puts the logic of dismantling the controls per se to improve competition under serious doubts.

In 50 industries, concentration has increased. Twelve of them fall under the 'machinery & machine tools' category whereas seven fall under the 'electrical machinery , apparatus,appliances and parts' category. Here too, in 10 product groups, concentration had declined before shooting up in the late 80s. Chemical and chemical products constitute 10 per cent of this group.

TABLE 6

INDUSTRIES WHOSE CONCENTRATION HAS DECLINED

INDUSTRIES	3-FIRM CONCENTRATION RATIO						
	WEIGHTS	YEARS					
		1978-79	1981-82	1983-84	1987-88	1989-90	1990-91
1. ABRASIVES & GRINDING WHEELS	2.8	100.0	97.7	99.1	100.0	100.0	82.0
2. ACETIC ACID	0.1	84.4	na	32.1	24.8	37.2	35.3
3. STORAGE BATTERIES	1.6	73.2	71.4	73.9	70.2	66.9	66.6
4. BEARINGS	na	80.0	73.8	66.7	65.5	57.0	60.5
5. BEER	5.8	55.0	na	36.8	44.2	25.0	28.5
6. ANIML FEEDS	na	50.7	na	59.5	21.0	21.0	31.8
7. STABLE BLEACHING POWDER	na	100.0	na	76.8	83.7	na	77.5
8. POWER CAPACITORS	0.2	65.2	81.7	na	na	75.4	na
9. CARBON BLACK	0.8	95.9	69.7	80.5	na	61.1	59.7
10. CEMENT	16.0	43.2	43.3	35.7	33.1	30.7	28.5
11. COTTON FABRIC	29.8	7.4	9.6	9.7	2.6	2.0	1.7
12. CRANES & HOISTS	1.5	76.0	37.4	69.1	41.6	27.8	40.4
13. DETERGENTS	2.5	57.2	85.2	77.5	26.0	38.3	39.2
14. BLASTING EXPLOSIVES	1.2	89.0	98.1	85.0	72.1	77.1	70.6
15. DETONATORS	0.4	100.0	na	100.0	72.1	77.1	70.6
16. DETONATING & SAFETY FUSES	0.1	100.0	na	100.0	100.0	77.1	70.6
17. ELECTRIC FANS	2.5	76.2	na	71.3	57.1	56.7	58.5
18. PHOSPHATIC FERTILISERS	6.7	39.3	na	na	25.7	30.4	32.6
19. GEAR BOXES	na	100.0	na	na	72.4	na	na
20. GLS LAMPS & FLUORESCENT TUBES	2.4	52.8	32.9	39.6	41.2	42.8	50.7
21. GLYCERINE	0.2	91.1	96.0	79.9	61.9	70.5	67.9
22. LIGHT FITTINGS	na	100.0	93.3	82.7	84.1	88.2	na
23. NYLON FILAMENT YARN	na	na	56.3	51.5	48.0	44.7	43.4
24. NYLON TYRE YARN	na	na	81.8	67.7	75.0	67.8	58.1
25. POLYESTER STAPLE FIBRE	na	na	69.1	78.7	56.2	54.4	55.4
26. SAFETY MATCHES	1.9	26.3	25.7	na	na	na	na
27. MEAT & FISH PROCESSING	na	66.9	na	na	42.1	39.7	31.4
28. MEDICAL INSTRUMENTS	0.4	99.6	na	na	52.3	44.4	49.9
29. COPPER	na	100.0	na	100.0	98.3	99.4	95.3
30. WRITING,PRINTING PAPER	27.7	33.2	25.4	na	34.6	22.8	19.8
31. NEWSPRINT	0.9	100.0	na	100.0	72.5	81.3	84.7
32. PESTICIDES	3.6	70.7	45.6	35.5	36.3	33.6	28.1
33. PHARMACEUTICALS	23.2	35.0	18.6	15.9	na	na	14.6
34. PIPES & TUBES (STEEL)	na	41.3	34.3	12.7	24.1	24.1	33.4
35. SODA ASH	2.0	96.4	98.6	74.2	88.1	91.3	91.4
36. SOFT DRINKS	1.6	82.8	na	na	72.1	8.8	67.8
37. SUGAR	17.6	5.7	na	na	5.0	5.2	3.9
38. SWITCHGEAR	5.1	56.6	22.5	61.3	na	43.1	44.4
39. TELECOMMUNICATION EQPT	3.7	72.4	60.5	na	100.0	58.4	39.9
40. TYPEWRITERS	0.5	92.6	85.0	100.0	100.0	64.9	69.3
41. TYRES & TUBES	8.5	55.5	53.9	49.1	40.2	42.1	na
42. VEGETABLE OILS	na	87.2	na	0.9	5.5	4.1	2.3
43. COMMERCIAL VEHICLES	na	na	87.5	51.5	na	82.2	83.0

Source: Same As Table 1.

TABLE 7

INDUSTRIES WHOSE CONCENTRATION HAS INCREASED

INDUSTRIES	WEIGHTS	3-FIRM CONCENTRATION RATIO					
		YEARS					
		1978-79	1981	1983-84	1987-88	1989-90	1990-91
1. AIR CONDITIONERS	1.7	77.7	71.4	56.5	70.0	68.4	81.2
2. ALUMINIUM & PRODUCTS	3.4	68.7	na	93.7	87.0	79.3	72.5
3. ASBESTOS CEMENT & PRODUCTS	4.6	72.7	53.8	90.5	75.3	74.9	83.7
4. DRY CELLS	2.0	69.1	69.0	73.6	78.6	77.9	81.1
5. BOLTS,NUTS & WASHERS	4.4	82.2	93.7	58.4	61.4	87.6	na
6. BREAD	1.3	89.3	76.6	91.8	93.5	100.0	100.0
7. POWER CAPACITORS	0.2	65.2	81.7	na	na	75.4	na
8. OTHER CAPACITORS	1.0	21.2	81.7	na	na	75.4	na
9. CASTINGS & FORGINGS	12.9	16.4	10.2	10.9	24.3	20.4	18.1
10. CAUSTIC SODA	4.0	31.0	na	28.0	33.5	33.5	34.0
11. AIR & GAS COMPRESSORS	2.0	51.2	50.6	49.2	53.7	60.6	66.9
12. COMPUTERS,CONTROL INSTRUMENTS & OTH	3.5	25.5	30.5	na	38.5	48.0	37.5
13. CONFECTIONERY	0.3	48.2	na	25.0	92.6	76.2	86.1
14. COTTON YARN	57.8	5.6	6.0	12.4	na	8.3	10.2
15. DIESEL ENGINES:STATIONARY & VEHUCUL	6.0	36.0	70.1	76.3	na	na	53.2
16. DYE INTERMEDIATES & FINISHED DYE ST	6.0	34.7	53.0	63.8	50.3	48.0	47.6
17. ELECTRIC FURNACES & OVENS	na	49.9	na	na	98.4	97.4	90.2
18. FERRO ALLOYS	2.2	39.0	na	na	29.8	60.9	52.2
19. NITROGENOUS FERTILISERS	15.2	33.4	na	67.7	51.8	58.1	67.4
20. FRUITS & VEGETABLE PRODUCTS	na	34.3	na	23.7	28.7	61.3	63.0
21. HAND TOOLS	5.4	38.3	na	66.3	na	na	na
22. HYDROCHLORIC ACID	na	36.3	na	31.5	47.4	40.9	40.3
23. CEMENT MACHINERY	1.4	82.0	72.3	60.9	20.5	93.4	94.8
24. CHEMICAL & PHARMACEUTICAL MACHINERY	2.6	37.4	37.7	50.1	40.3	41.1	55.4
25. SUGAR MACHINERY	1.8	30.4	na	na	61.5	60.4	71.5
26. TEXTILE MACHINERY	7.6	35.8	33.1	38.6	46.1	60.7	68.8
27. INORGANIC ACIDS	na	89.5	na	na	100.0	na	na
28. INSULATORS	na	53.2	na	100.0	na	87.1	90.9
29. JUTE TEXTILES	20.0	11.4	19.0	20.6	13.7	13.5	18.8
30. MACHINE TOOLS	6.5	45.6	33.5	68.3	40.8	39.7	52.0
31. MOTORS (ELECTRICAL)	12.9	34.6	29.1	57.2	38.5	33.5	58.5
32. PETROLEUM REFINING & PROCESSING	15.2	80.2	na	na	97.7	na	na
33. PLASTIC PRODUCTS	5.4	42.9	na	50.6	na	na	na
34. POWER DRIVEN PUMPS	3.0	38.6	36.8	19.8	38.7	39.5	49.7
35. RAILWAY WAGONS	5.6	66.9	64.5	78.5	na	na	na
36. REFRACTORIES & FIREBRICKS	0.2	41.5	36.1	31.2	48.3	55.8	56.1
37. DOMESTIC REFRIGERATORS	na	46.5	76.2	61.9	76.2	71.5	81.4
38. SANITARYWARES	na	52.7	na	68.9	44.7	87.2	83.6
39. SCOOTERS	na	77.0	81.8	92.5	90.2	85.4	87.2
40. SEWING MACHINES	2.6	52.3	na	59.7	95.1	99.9	100.0
41. SOAP	3.6	77.1	81.1	78.6	86.1	30.6	82.4
42. STRUCTURALS	2.6	52.4	27.4	41.7	38.7	41.0	61.3
43. SULPHURIC ACID	na	na	na	26.4	27.2	36.1	na
44. TRACTORS	6.2	51.9	43.5	43.6	56.7	55.6	56.7
45. TRANSFORMERS	2.4	41.0	49.8	51.0	53.6	37.1	53.4
46. BUSES & TRUCKS	na	94.9	na	na	100.0	na	na
47. WIRES & CABLES(COMMUNICATION)	9.7	32.4	27.5	43.6	47.0	42.5	na
48. WIRES	na	49.2	50.0	47.6	na	58.5	63.3
49. WOOLLEN TEXTILES	na	24.5	na	na	47.8	94.3	97.8
50. WRIST WATCHES	3.3	79.6	87.8	83.7	52.0	80.3	96.2

Source: Same As Table 1

TABLE 8

INDUSTRIES WHOSE CONCENTRATION HAS REMAINED STABLE

INDUSTRIES	WEIGHTS	3-FIRM CONCENTRATION RATIO YEARS					
		1978-79	1981	1983-84	1987-88	1989-90	1990-91
1. AIRCRAFT BUILDING		100	100	100	100	100	100
2. ALCOHOL	2.5	46.5	na	na	47.2	52.2	43.4
3. BICYCLES	2.3	72.5	67.3	88.3	64.5	66.2	na
4. BOILERS & STEAM GENERATING PLANTS	na	na	na	na	na	na	na
5. CIGARETTES	3.9	96.9	79.4	86.5	99.4	93.9	95.0
6. GRAPHITE ELECTRODES	5.8	83.3	78.3	87.6	84.1	90.1	84.4
7. METALLIC ELECTRODES	6.6	99.8	na	na	99.9	99.8	na
8. FOOTWEAR:RUBBER,CANVAS	1.4	15.8	na	na	74.9	71.7	79.9
9. GEARS	1.1	71.7	na	32.9	na	58.0	95.2
10. GENERATORS	na	75.4	46.1	50.2	72.4	74.0	68.2
11. GLASS & GLASS PRODUCTS	6.7	99.4	98.0	98.1	na	na	na
12. GLS LAMPS & FLUORESCENT TUBES	na	15.1	na	na	66.6	51.0	60.0
13. METALLURGICAL MACHINERY	2.4	52.8	32.9	39.6	41.2	42.8	50.7
14. MINING MACHINERY	0.5	93.6	na	na	76.7	98.1	97.3
15. PAPER MACHINERY	0.8	95.4	95.0	50.2	52.0	96.9	95.2
16. VISCOSE FILAMENT YARN	0.8	19.6	na	43.9	100.0	100.0	100.0
17. VISCOSE STAPLE FIBRE	na	na	66.0	64.1	63.8	66.0	66.3
18. MOPEDS	na	na	100.0	95.4	100.0	100.0	100.0
19. MOTORCYCLES	1.9	84.5	70.5	95.1	80.3	86.5	88.5
20. ZINC	1.8	98.2	100.0	100.0	81.0	89.3	92.3
21. LEAD	na	100.0	na	100.0	100.0	100.0	100.0
22. PAINTS & VARNISHES	na	100.0	na	na	100.0	100.0	100.0
23. PASSENGER CARS	3.5	51.6	52.8	52.3	44.1	43.3	56.8
24.RAILWAY COACHES	1.4	99.9	100.0	99.5	99.4	99.5	99.9
25. RAILWAY LOCOMOTIVES	4.8	100.0	100.0	100.0	na	na	na
26. REFRIGERATION & A/C EQPT		100.0	na	100.0	na	na	na
27. JEEPS	1.6	81.6	73.1	89.1	64.0	na	81.1
28. WOOD PULP(PAPER GRADE)	2.9	100.0	100.0	100.0	100.0	100.0	na
29. WOOD PULP(RAYON GRADE)	1.6	100.0	na	97.1	99.8	100.0	na
30. HARD BOARDS	2.3	100.0	na	na	86.2	100.0	100.0

Source: Same As Table 1

In the stable concentration category, there are 29 products of which industry groups "machinery & machine tools" and "transport equipment" are the dominant ones (five and seven respectively). Hence, stable and increasing concentration has been observed to a large extent in the following groups;

a) machinery and machine tools and parts

b) electrical machinery , apparatus,appliances & parts

c) transport equipment and parts

Turnover Rates:

One major disadvantage of the concentration ratio is that it does not disclose the way in which the composition of the top 'k' firm group has been changing over the years. For instance, though the concentration ratio may remain stable, the top 3 firms may keep changing indicating a more competitive environment than the ratio would indicate. Conversely, though there might be a decline in the ratio, the top three firms might continue to be the same revealing a greater degree of market power. Hence, a study of the turnover rates becomes essential.

Almost 50 per cent of the firms holding the top three ranks in 1978-79 have maintained their status till 1990-91.

Total no: of: firms= 393

No:of: stable firms= 193

Share of stable firms= 49.1 per cent.

Subsequently, the firms were divided into the following.

1.Firms belonging to Large Business Houses.

2.Other private Indian firms.

3.Government firms.

4.Foreign private firms.

Table-9 shows the way these firms have moved in and out of the top three ranks.

TABLE:9
Turn-over Rate According to Nature ofOwnership.

TYPE OF OWNERSHIP	FIRMS-OUT	%	FIRMS-IN	%	ST.FIRMS	%	INT.ENTRY	%	TOTAL
PRIVATE FIRMS	72	41.14	45	25.14	26	13.98	33	36.26	176
FIRMS OF LBH's	55	31.43	68	37.99	95	51.08	37	40.66	255
GOVERNMENT FIRMS	19	10.86	33	18.44	40	21.51	6	6.59	98
FOREIGN FIRMS	29	16.57	33	18.44	25	13.44	15	16.48	102
TOTAL	175	100	179	100	186	100	91	100	631

Note:1. Firms-out: Firms that moved out of the top three ranks
Firms- in: Firms that have entered into the top three afresh.
St. Firms: Firms that have maintained their positions.
Int. Entry:Firms that have moved in later and moved out before the final year.
2. Firms classified as Single Large and Single Dominant Undertakings were excluded.
Source: Same as Table: 1.

TABLE: 10
Turn-over Rate According to Nature of Ownership.(Percentage Shares)

TYPE OF OWNERSHIP	FIRMS-OUT	FIRMS-IN	ST.FIRMS	INT.ENTRY	
PRIVATE FIRMS	40.91	25.57	14.77	18.75	100
FIRMS OF LBH's	21.57	26.67	37.25	14.51	100
GOVERNMENT FIRMS	19.39	33.67	40.82	6.12	100
FOREIGN FIRMS	28.43	32.35	24.51	14.71	100

Note: Firms-out: Firms that moved out of the top three ranks
Firms- in: Firms that have entered into the top three afresh.
St. Firms: Firms that have maintained their positions.
Int. Entry:Firms that have moved in later and moved out before the final year.
Source: Same as Table: 1.

It clearly shows the dominance of the large business

houses and their ability to thwart entry of smaller private firms. More than 40% of the firms that have gone out of the top three ranks are private firms while only 25% of the new firms are private firms. They have been replaced mainly by firms belonging to the Large Business Houses and to some extent by government firms. Moreover, of the firms which have continued to remain at the top, more than 50% belong to the Large Business Houses. The government firms too reveal a tendency to retain their position. Of the total 98 government firms that had figured at the top, more than 40% had maintained their positions throughout.

Similarly, a greater proportion of the firms belonging to the large business houses tend to remain stable in industries where the concentration has been declining. This is observed for the intermediate group, consumer non durable industries as well as the group solely consisting of product groups with declining concentration.

Percentage Of Stable Firms (LBHs)

Intermediate goods	64.44
Basic goods	47.36
Capital goods	44
Consumer durable	53.33
Consumer non-durables	65.38

Also, a greater percentage of firms belonging to LBHs have entered into the top three ranks in the increasing and stable concentration industries than in those where it has decreased. Thus, though the concentration ratios have been declining, firms of LBHs have continued to retain their position, indicating that concentration ratios overestimate the extent of competitiveness in the manufacturing sector.

In the consumer durable industry, only 20 per cent of the firms that moved out belonged to the large business houses whereas 62% of them were private firms. A similar trend was noticed in the industries classified on the basis of the movement of concentration ratios.

Firms that moved out

(In per cent)

Industry group	Private	LBHs
Decrease	26	30
Increase	52	31
Stable	60	26

Only in the non durables industry, more private firms have moved into the top three ranks than the firms attached to LBHs. A significant presence of foreign firms was also observed in this category. However, the overall presence of foreign firms hasn't changed much with a slightly greater number of firms entering in than that went out. Government firms were predominant in basic goods industry and to some extent, in the capital goods sector.

Conclusion:

The above analysis has been made to study the impact of the liberalisation policies on industrial concentration. It is generally assumed that reduction of barriers to entry would foster greater competition as new firms would enter into the market more easily. But the results of the analysis carried out

in this chapter does not lend empirical support to this proposition. In fact, concentration has declined only marginally and has again increased to a level slightly greater than the initial concentration levels.

Only the chemical & chemical based industries have shown a substantial decline in concentration. Most of the other groups, especially industrial machinery, machine tools, electrical machinery and transport equipment reveal high concentration and it has remained either stable or increased further. Concentration has increased in the consumer durable industry in spite of its fast growth in the eighties. This industry is dominated by firms belonging to the large business houses and multinationals who by their superior marketing power have managed to maintain their market share.

The fact that concentration has increased maybe due to the removal of restrictions on the expansion of MRTP and FERA firms from 1985 onwards. This is further substantiated by the study of firms turn over from the top ranks which shows that most new firms entering into the top ranks belong to the big Business Houses. This phenomenon also undermines the principle of '"growth with equity" that was supposed to be the guiding light of development in India.

CHAPTER V

INDUSTRIAL CONCENTRATION AND INNOVATIVENESS

In the preceding two chapters, changes in the market structure, (measured by 3-firm product concentration ratio), and the concentration of economic power (measured by the growth of big business houses) during a period, marked by a progressive relaxation of government policy controls, have been examined. It has been found that the large Business Houses have grown considerably during the period and monopoly power has either increased or remained stable in a number of industries. These findings do not lend empirical support to the general belief of the proponents of liberalisation that in the absence of government controls, the entry of new firms and competition between existing firms would undermine the existing monopoly positions. Contrarily, the analysis shows that despite policy relaxations, the market structure continues to be predominantly oligopolistic.

Another stream of argument has been that the relaxation of controls would encourage the growth in size of firms and facilitate their technological progress through access to advanced technology from abroad or innovation through internal R & D. This coupled with the threat of possible entry, it is claimed, would ensure a certain efficiency of operation that was otherwise stifled by government control. This is considered especially true with regard to their performance on the technological front. A.V. Desai, has this to say . " ... Thus,

it is the policies that control competition- licensing, MRTP, preferences to state enterprises and small-scale industry- as well as those that control technology imports that are ultimately instrumental in making Indian industry technologically stagnant and dependent" (1988, p:vii). Sanjaya Lall too makes a similar point[1]. By inference, a period of policy relaxation should be found associated with higher growth, productivity and innovativeness in Indian industry. These and some other propositions that are usually put forward in relation to market structure and innovativeness, have been tested in this chapter.

Market Structure and Innovation: The Postulated Relationship:

Of the various performance and behavioural variables that have been conventionally related to market structure, technological change has been a relatively new addition. Only when a few studies in the fifties pointed out to the marginal effect that the absolute increase of input had on change in output (Abramovitz, 1956; Solow, 1957), enquiries into other sources of output expansion became a serious concern. Productivity increases arising out of adoption of better techniques and organisational methods was found to have a significant role in long run economic growth. It was from then on that the nature and causes of technical change became an object of systematic study. However, since then, much work done in this regard has been in relation to the developed capitalist economies.

In developed capitalist economies, inter-firm rivalry forces the firms to constantly revolutionise the methods of production or face the threat of losing out to more efficient firms. Even in monopolistic and oligopolistic market structures, the threat of possible entry is sufficient to keep the firms on their toes. Innovative activity is a major component of a firm's functions and in-house Research & Development effort constitutes a primary source of new processes and products. In oligopolistic markets (the most prevalent), as price competition is ruled out, reduction of costs through better production methods happens to be the only way by which firms can ensure higher profits. Moreover, this also acts as a major deterrent to potential entrants.

An issue of related interest that gained significance was the identification of an environment most conducive for technical change as it was found that there were a lot of disparities in the rate of change not only across economies but even across industries and firms. The study of the relationship between market structure and technological behaviour/performance grew out of this enquiry.

It was the ideas of Joseph Schumpeter that illuminated most of the research undertaken in this area subsequently. Schumpeter considered technical change to be the single-most important factor for growth in a capitalist economy. Though he was influenced by Marx, while Marx put the dynamics of the system at the fore front, Schumpeter considered the entrepreneur as the prime mover, who by his innovative efforts, continuously changed

the basis of productive activity[2]. He was of the opinion that a perfectly competitive market structure, though by its optimal resource allocation mechanism can be best at any particular point of time, is not conducive for long term growth. To quote Schumpeter, "A system... that at every point in time fully utilises its possibilities to its best advantage may yet in the long run be inferior to a system that does so at no given point in time, because the latter's failure to do so may be a condition for the level or speed of long-run performance" (Schumpeter, 1975, p:90). in a perfectly competitive market, the costless diffusion of information erodes the profits resulting from an innovation, removing any incentive to innovate.

He also criticised the narrowness of the neo-classical treatment of competition. "But in capitalist reality as distinguished from its text book picture, it is not that kind of competition which counts but the competition from the new commodity, the new source of supply, the new type of organisation (the largest-scale unit of control for instance)- competition which commands a decisive cost or quality advantage and which strikes not at the margins of the profits and the outputs of the existing firms but at the foundations and their very lives."(Schumpeter, 1975, p:91)

Two distinct phases can be discerned in Schumpeter's thinking in this regard. In the first phase, he idealised the individual entrepreneur, whereas in the second phase, characterised in his book " Capitalism, Socialism & Democracy"(1975), facing upto capitalist reality of his times, he

placed this mantle on big corporations. According to him, giant corporations with their higher surplus would be in a better position to undertake research activity as research has increasingly become a high investment effort. It is this later formulation that has formed the theoretical underpinning for most of the studies that were to follow. Two broad postulates are usually associated with Schumpeter.

1. Higher the monopoly power of a firm, the more would be the incentive to innovate as the expectations of improving profit margins through innovations are greater.
2. Bigger firms are more innovative than smaller firms due to research economies of scale.

Both these propositions arise out of the uncertain and dynamic nature of the environment in which the firms operate. For one thing, bigger and more diversified firms can afford to invest in different research projects without unduly having to suffer from the failure of one project. Another factor that favours bigness is the 'Planck's Principle of Increasing Effort.'

The interaction between monopoly power and innovative activity is multifold. Kamien and Schwartz (1982) synthesise the various possibilities explored.

1. Firms undertake research in anticipation of the monopoly power a new process or product would bring.
2. Firms can consolidate the already existing monopoly power in one industry by using their marketing skills to promote the new products better.
3. An amount of secrecy is essential in research as disclosure of information may lead to imitation by rivals. If they were to depend on external sources for finance, there is a distinct possibility that this might happen. So monopoly firms, by their capacity for internal fund generation would do away with this risk.

4. Such firms would be in a better position to recruit innovative entrepreneurs than firms in a competitive market.

But counter-tendencies, ie, tendencies that retard innovative performance in a monopolistic market too exist. Firms in such markets have little incentive as even their present profits are above normal and their priorities may therefore be different. As a result, they would devote more time consolidating their position than in acquiring new ones. Moreover, as pointed out by Usher (1964) and Arrow (1962), as these firms already reap monopoly profits, they would rather make as much profits as possible from the present product instead of trying to get into a new market. For a new firm, there is only one option, ie, to innovate, if they are to enjoy monopoly power.

Other than this, factors like technological opportunity and market opportunity are proved to have considerable influence in determining the level of technological activity. If firms find that the gains to be had from doing research in a specific area are greater than investing in another area, then the incentive to innovate would differ in these industries. Similarly, if market demand structure calls for changes in the nature of the product produced, then firms catering to this market would be forced to react to these expectations or face the risk of being overtaken by rival improvements.

Empirical studies of these variables too reveal this ambiguity in the nature of their relationships. After an extensive review of the econometric exercises, examining the relationship between monopoly power and innovative behaviour,

Kamien and Schwartz conclude " In most instances it has been difficult to discern a statistical relationship among these variables. There is agreement that the relation may vary with the "technology opportunity class" of the industry."(1982, p: 29)

Most general studies have revealed a very weak but positive association between concentration and research input. When differences in opportunity was incorporated in the study, some studies pointed to a negative relation in high technology industries, (Adams,1970; Globerman, 1973) and a mixed relation in technologically less intensive industries, But again, there were other studies indicating quite the opposite trend (Philips,1971; Rosenberg,1976).

This ambivalence led some to posit that there would be an optimal concentration level where the marginal loss in static efficiency as a result of departure from perfect competition equals the marginal gains from innovative activity. Scherer(1967) and Kelly(1971), through independent studies, found that the research intensity was highest when the four-firm concentration ratios were between fifty and sixty. Hence, it would seem that the interaction among these variables is quite complex and any generalisations ought to be made with caution. Later studies have even treated both market structure and innovative effort as simultaneous processes affected more generally by the macro technological and economic environment (Scherer, 1980).

Technical change in the developing economies began to evoke interest when some of the erstwhile colonies and hence,

under-developed countries, made a gradual shift in the nature of their exports, from primary commodities to manufactured products. The same propositions have been examined for these economies as well, but with lesser intensity and greater ambiguity. The reasons are many. To begin with, the nature of technical change here is different. Basic research is hardly undertaken. Mostly, the basic design and machinery are imported and progress in this front is viewed as the ability of firms to adapt this technique to the local milieu. Martin Fransman (1985) lists the activities normally undertaken in the developing economies.

1. Search for new products and processes which may be active or passive by nature.
2. Adaptation to local conditions which include scaling down of operations according to local market size, substitution of imported raw materials by locally available ones, replacing automatic capital-intensive equipment with labour-using methods, etc.
3. Improvements which may be incremental or major.
4. Developing new products and processes. They are normally new for only the firm or industry and not to the world.
5. Basic Research which is very minor and is usually state sponsored.

Imports of machinery and technology purchases from advanced countries constitute a major source. Research and developmental activity is mainly directed towards the first, second and third kinds of activities which bring about only incremental changes. The amount of state intervention in determining the direction of research, protection given to infant industries, erection of barrier to entry, etc significantly affect the intensity of innovative efforts.

Thus, the number of variables affecting technical change is higher and the relations more complex. Therefore, a great deal of caution has to be exercised when the frameworks used in developed countries are used to analyse technical change in these economies. However, efforts have been made to comprehend this process, especially after the remarkable economic performance of newly industrialising countries like Taiwan, South Korea, etc.

Studies located in the Indian context too rose out of this as India had undergone a long period of import substitution. They were of two kinds. Schumpeterian concerns formed the backdrop of one set of studies while analysis of the impact of government policy on technical progress in specific industries constitute another set. Here again, the findings are mixed. Some studies did not find any significant relationship between firm size and R & D effort (Subrahmanian, 1971, 1991). Some other studies pointed towards a positive association between size and R & D intensity, (Sanjay Lall,1983). Katrak (1985) found the elasticity of R & D expenditure to sales to be less than unity. According to Siddharthan (1988), R & D intensity increased with sales turn-over upto a point beyond which there was a decline. The relation between market concentration and industrial R & D was explored in detail by Nagesh Kumar (1987). Though his focus was on the relative technological performance of local and foreign firms, he had also included concentration as a variable affecting their behaviour. He discovered a negative association between market concentration and R & D effort. He attributes it to the government policies which had effectively cut off the

threat of potential competition, leaving no incentive for the monopolies to innovate.

The present analysis takes off from the above study. If the liberalisation measures had relaxed the barriers to entry, then the behaviour of firms faced with the threat of possible entry would be different. Keeping this in mind, the objective of the study would be to explore the association of changes in concentration levels with the industry performance in terms of growth of output and innovative activity in the eighties.

Methodology:

Innovative activity can be quantified either in terms of the inputs used or in terms of output generated from these inputs. Both these measures are not devoid of problems. Input measures conventionally used are R & D expenditure, (R & D expenditure as a percentage of sales turnover), R & D personnel (their proportion to the total employees), amount of R & D equipment, etc. Aggregate R & D expenditure does not divulge the composition of this capital. Differences in the experience of the scientists and engineers does matter a lot. Moreover, contributions to technical advancement come from other production departments trying to grapple with practical constraints. No measure can adequately capture all these aspects.

Patents form the most important output indicator though the qualitative differences among innovations are not reflected in their number. Changes in productivity is another measure. But,

changes in productivity need not be solely due to shifts in the production function. Better organisation of production, higher capacity utilisation, efficiency in the handling of raw materials, etc all contribute to growth in productivity. However, in a developing economy, as break through changes hardly take place and progress is incrementary in nature, it can be used as a fairly comprehensive indictor (Subrahmanian & AnandRaj, 1992).

For the present analysis, data on R & D expenditure as a percentage of sales has been used as a proxy for innovative effort. Firm-level data are published only from 1984-85 onwards by the Department of Scientific and Industrial Research. Moreover, the year to year firm coverage differed very widely that there were only a handful of firms whose R & D data was available for atleast three years. So, only industry-wise data reported in "R & D Statistics" published by the Department of Science & Technology could be used. The latest year for which data is available is 1989. Data was collected for 21 industries starting from 1980-81. Public and private sector firms are covered separately. For the purpose of our analysis, they have been combined.

Total factor productivity growth can be considered as a reflector of efficiency of utilisation of resources. A fresh computation of TFPG for the period until 1985-86 was not found necessary as estimates have already been made and enough data was not readily available for the recent period. The indices furnished by Ahluwalia (1991) in "Productivity and Growth in Indian Manufacturing" has been used. It covers the period 1980-81

to 1985-86 only. Hence, the period of intensive liberalisation, ie, the second half of the eighties had to be left out. The Translog index has been computed by Ahluwalia for a set of 16 industries. Of these, concentration change could be clearly identified for only eleven industries.

The logic of the analysis is as follows. There is evidence of a significant increase in the rate of growth of output of the manufacturing sector in the eighties. This growth may be the contribution of new firms or may be due to the expansion of already existing monopoly firms. The latter maybe more plausible as the earlier analysis shows that industries with a high initial level of concentration have not shown much decline in concentration levels in the subsequent years. It would be pertinent, therefore, to see whether monopolistic industries indulged in output restriction as is usually believed. Given the fact that their mobility has increased after policy relaxation, they may have contributed to output increases, as claimed by the proponents of policy relaxation. If that were true, then the source and the kind of dynamism usually associated with growth propelled by monopoly firms has to be traced. If this growth had been accompanied by any competitiveness, due to the threat of possible entry that monopoly firms would be exposed to in the wake of liberalisation, it should get reflected in the innovative effort of the firms and efficiency of factor use.

The Results of Analysis:

Concentration and Growth:

Normally, in an expanding market, it would be easier for new firms to enter before the existing ones take control of the situation. However, Mason (1967) argues that monopolistic industries, through regular investment and innovative activity, grow faster than more competitive industries. Counteracting influences may also be discerned in the ability of big firms to exploit scale economies that a growing market would offer. In the Indian context, an earlier study revealed a very weak positive relationship between initial concentration and growth for the period 1964-1980 (Arup Maharatna, 1989). However, he found a strong association between high growth and concentration decline.

For the present study, the data on growth rate pertains to the period 1983-1990. The average of concentration levels for the years 1978-79 and 1980-81 has been taken to be the initial concentration level. To eliminate the variability arising out of the magnitude of numbers, their ranks were correlated. The data and results are tabulated in Table 1.

TABLE 1

Association between Initial C.L and Average Growth.

Product Groups	GR	Rank	C.L	Rank
Elec. M/C & Appliances	22.39	1	85.73	2
Chemical & Chemical Pdts	9.8	2	78.93	4
Leather and Fur Pdts	8.95	3	75.83	6
Non-metallic Mineral Pdts	8.34	4	43.55	12
Paper & Paper Pdts	8.33	5	91.75	1
Transport Eqpt	7.13	6	77.47	5
M/C & M/C Tools	6.68	7	55.35	10
Metal Pdts & Parts	6.15	8	59.95	9
Basic Metals & Alloys	5.66	9	45.43	11
Rubber, Plastic & Petr.Pdts	4.93	10	64.72	8
Wood & Wood Pdts	4.90	11	82.99	3
Cotton Textiles	4.82	12	6.50	15
Food Pdts	3.59	13	31.90	13
Jute, Hemp & Mesta Textiles	1.84	14	11.40	14
Beverages & Tobacco	-0.01	15	69.57	7
Rank Correlation Co-efficient= 0.531*				
*: Significant at 5% Level.				

Note: C.L indicates the Concentration Level
GR indicates Growth Rate of Output
Source: 1. For G.R, Economic Survey, Various Issues
2. For C.L, Data on Market and Market Share, CMIE, Various Issues.

The rank correlation results are striking. The co-efficient is statistically significant at the five percent level. It would mean that the industries with greater concentration levels have grown at a faster rate. Seen in the light of an earlier finding that concentration hasn't declined much in the initially concentrated industries, this would imply that the growth in the eighties has been due to the expansion of big firms in monopolistic/oligopolistic industries. But, if this growth had infused any sort of competitive behaviour among the firms belonging to the big Business Houses, it should have lead to higher efficiency in production, use of resources, better

capacity utilisation, utilisation of scale economies, etc.

Concentration and Productivity:

It was widely believed that the irrational domestic licensing and concentration prevention policies and the logic of import substitution led to considerable inefficiency in production through loss in scale economies, eliminating any incentive to reduce costs and innovate (Bhagawati & Desai, 1970, Bhagwati & Srinivasan, 1975, Frankena, 1974). In this context, the changes in productivity in a period of slackening of controls have been examined.

As mentioned earlier, analysis could be carried out for the period only upto 1985-86. Indices for only 12 industries could be used, as proper aggregation of industries from the CMIE classification could be done only for them. Since data was available for only six years, changes in concentration levels has not been considered as it is too short a period to affect productivity.

As could be seen from Table-2, there is no relationship whatsoever between these variables. The productivity co-efficient has a negative sign though of very negligible magnitude and insignificant. Though very definite conclusions can't be drawn, given the data limitations, it is very hard to buy the claims that liberalisation would force firms to utilise the resources more efficiently.

TABLE:2

Association between C.L & TFPG

INDUSTRIES	Avg.C.L (1978/79-83/84)	TFPG (1980/81-85/86)
1 FOOD	37.56	6.7
2 TOBACCO	70.02	5.45
3 TEXTILES	12.72	0.4
4 PAPER & PAPER PDTS.	71.90	-2.5
5 RUBBER, PLASTIC, PETRM. & C	63.93	2
6 CHEMICAL & CHEMICAL PDTS	67.29	0.4
7 NON METALIC MINERAL PDTS	72.99	2.3
8 FERR.MET	35.75	-2.4
9 METAL PDTS & PARTS	67.16	-2.6
10 MACHINERY & MACHINE TOOLS	59.70	1.9
11 ELECTRICAL MACHINERY & APPL	57.57	3.4
12 TRANSPORT EQUIPMENTS	82.98	1
Correlation Co-efficient= -0.0348		

Note: C.L indicates Concentration Level

TFPG indicates Total Factor Productivity Growth

Source: For C.L, same as Table 1
For TFPG, Ahluwalia (1990)

TABLE 3

Association between C.L & Growth of Factor Inputs

INDUSTRIES	Avg:C.L (1978/79-83/84)	Growth of F.I (1980/81-85/86)
1 FOOD	37.56	-1.35
2 TOBACCO	70.02	3.11
3 TEXTILES	12.72	1.22
4 PAPER & PAPER PDTS.	71.90	11.38
5 RUBBER, PLASTIC, PETRM. & C	63.93	4.28
6 CHEMICAL & CHEMICAL PDTS	67.29	6.95
7 NON METALIC MINERAL PDTS	72.99	4.48
8 FERR.MET	35.75	7.09
9 METAL PDTS & PARTS	67.16	6.39
10 MACHINERY & MACHINE TOOLS	59.70	0.68
11 ELECTRICAL MACHINERY & APPL	57.57	10.76
12 TRANSPORT EQUIPMENTS	82.98	6.46
Correlation Co-efficient= 0.432** **:Significant at 10% Level.		

Note: C.L indicates Concentration Level
F.I indicates Factor Inputs

Source: For C.L, same as Table 1
For F.I, computed from Economic Survey, Various Issues and Ahluwalia (1990)

If productivity changes cannot explain the relationship between growth and high concentration levels, then the source of growth has to be sought in the input accumulation process. To test this, the difference between productivity growth and output growth, ie, the growth of factor inputs, was correlated with concentration levels. (Table-3). As the output categories and the industry categories for TFPG differed, arbitrary averaging of certain groups had to be done. But despite that, the rank correlation co-efficient is positive and significant. It maybe argued therefore that the monopolistic industries seemed to have grown through the use of more resources than through raising efficiency in production. That leaves one more important aspect to be examined; the effect of concentration on innovative behaviour.

Concentration and R & D Behaviour:

The relationship between concentration level and research intensity levels as well as the association between the changes in these levels are therefore studied. Firstly, the average intensity levels was regressed against the initial concentration levels (Table-4). The R squared value was negligible. The co-efficient was negative but insignificant.

TABLE 4.
Association between R&D Level & C.L.

Industries	R & D Level	C.L.
1. Food Processing	2.24	50.6
2. Medical Appliances.	1.99	99.6
3. Drugs & Pharma	1.92	35.0
4. Telecommunication	1.76	72.4
5. Machine Tools	1.68	45.6
6. Eltnc & Eltc Eqpt.	0.93	39.4
7. Industrial M/C.	0.88	56.3
8. Chemicals.	0.83	79.0
9. Transportation	0.76	90.4
10. Dye Stuffs	0.73	34.7
11. Household, Office, Eqp	0.61	82.4
12. Boilers & Steam Gnr. P	0.61	96.9
13. Cement & Gypsum.	0.56	43.2
14. Soaps, Cosmetics,etc	0.55	75.1
15. Sugar	0.46	5.7
16. Paper & Pulp	0.46	83.5
17. Metallurgical	0.38	64.7
18. Fertilisers	0.36	41.2
19. Textiles	0.34	8.1
20. Fermentation	0.30	50.8
21. Veg.oil & Vanaspati	0.11	27.9

Regression Result:
R & D Intensity Level= 0.6295 + 0.0044 (C.L)
(1.92) (0.84)
R Sqrd= 0.035.
(Figures in brackets represent 't' values).

Note : C.L. = Concentration Level.
Source: For C.L., same as table 1.
For R&D intensity, R&D Statistics, Published by Department of Science and Technology, Govt. of India. Various issues.

Then their growth rates were regressed. As can be seen from Table-5, the R squared value was low (0.045). The co-efficient of R and D growth rate was negative (-0.33), but insignificant and negative. The analysis suggests that firms have maintained their positions through methods other than the ones normally associated with increasing competitiveness.

TABLE 5

Association between C.G. and R & D.G.

INDUSTRIES	R & D.G.	C.G.
DYE STUFFS	145.4	9.3
FOOD PROCESSING	108.84	2.1
FERMENTATION	44.75	-10.8
VEG.OIL & VANASPATI	38.11	3.3
COMMERCIAL,OFFICE,HOUSEHOL	17.28	0.1
CHEMICALS	12.45	-3.8
MEDICAL APPLIANCES	11.91	-16.7
BOILERS & STEAM GENERATING	11.5	0.3
FERTILISERS	7.38	7.1
SUGAR	5.62	-11.1
TEXTILES	5.22	9.8
TELECOMMUNICATION	4.4	5.6
ELTNC & ELTC EQPT	2.95	4.7
METALLURGICAL	2.07	0.8
SOAPS,COSMETICS,ETC	1.46	-0.8
CEMENT & GYPSUM	-1.75	-7.8
DRUGS & PHARMACEUTICALS	-2.28	-23.2
PAPER & PULP	-5.03	-6.3
TRANSPORTATION	-5.22	0.9
M\C TOOLS	-11.5	13.1
INDL M\C	-13.32	9.5

Regression Result:

R & D Growth = 6.19 - 0.332 (Concentration Growth)

(1.8) (-0.9) Figures in bracket refers to 't' values. R Squared = 0.045

Note : C.G. = Concentration Growth.
R&D.G. = R&D intensity Growth.

Source: Computed from the same sources as table 4.

Then the effect of initial concentration level on change in R & D intensity was examined. The results (Table-6) reveal very little relationship though the β value was positive and insignificant. It seems that, if anything, declining concentration would improve innovative activity rather than high absolute levels as has been claimed.

TABLE 6
Association between C.L. and R & D.G.

INDUSTRIES	R & D.G.	C.L.
DYE STUFFS	145.4	34.7
FOOD PROCESSING	108.84	50.6
FERMENTATION	44.75	50.8
VEG.OIL & VANASPATI	38.11	27.9
COMMERCIAL,OFFICE,HOUSEH	17.28	96.9
CHEMICALS	12.45	79
MEDICAL APPLIANCES	11.91	99.6
BOILERS & STEAM GENERATI	11.5	96.9
FERTILISERS	7.38	41.2
SUGAR	5.62	5.7
TEXTILES	5.22	8.1
TELECOMMUNICATION	4.4	72.4
ELTNC & ELTC EQPT	2.95	39.4
METALLURGICAL	2.07	64.7
SOAPS,COSMETICS,ETC	1.46	75.1
CEMENT & GYPSUM	-1.75	43.2
DRUGS & PHARMACEUTICALS	-2.28	35
PAPER & PULP	-5.03	83.5
TRANSPORTATION	-5.22	90.4
M\C TOOLS	-11.5	45.6
INDL M\C	-13.32	56.3

Regression Result:

R & D Growth = 6.19 - 0.25 (Concentratiion Growth)
(0.65) (-0.82) Figures in brackets refers to 't' values

R Squared= 0.03

Note : Abbreviations used here are same as above tables.
Source: Same as above table 5.

As there was high variability in the data, the industries were ranked according to their research intensity levels. The upper half was taken to be high intensity industries while the lower eleven were assumed to be low intensity industries. As the industries for which R and D Statistics are given cover more than 70 per cent of the industries covered by the CMIE (which itself covers around 70 per cent of the total value added in the manufacturing sector), this kind of grouping can be considered safe.

The intensification of the liberalisation process from 1985 onwards warrants the division of the period into two sub periods; the pre-1985 and post-85 phases. The correlation results for levels in concentration and R and D intensity for the two sub periods for the two categories industries are presented in Tables 7 A and B. This exercise seems to point towards some interesting results.

TABLE 7 (A)

Association between C.L and R & D .L: (Dis-aggregated)

PRE-85 PERIOD				
INDUSTRIES (High R&D I.)	RANK	R&D.L	RANK	C.L
FOOD PROCESSING	1	3.65	6	50.6
MEDICAL APPLIANCES	2	2.46	1	99.6
DRUGS & PHARMACEUTICALS	3	1.80	10	23.17
TELECOMMUNICATION	4	1.53	5	66.45
CHEMICALS	5	0.96	4	74.05
ELTNC & ELTC EQPT	6	0.95	9	42
DYE STUFFS	7	0.88	7	50.5
M\C TOOLS	8	0.81	8	49.13
COMMERCIAL,OFFICE,HOU	9	0.63	3	80.69
TRANSPORTATION	10	0.61	2	86.79
Rank correlation Coefficient= -0.12				
(Low R&D I. Industries)				
SOAPS,COSMETICS,ETC	1	0.58	3	80.41
INDL M\C	2	0.55	5	54.86
BOILERS & STEAM GENERATI	3	0.51	1	87.6
SUGAR	4	0.50	11	5.7
CEMENT & GYPSUM	5	0.49	8	40.73
PAPER & PULP	6	0.42	2	83.52
FERMENTATION	7	0.41	6	50.75
FERTILISERS	8	0.35	7	50.03
METALLURGICAL	9	0.32	4	62.28
TEXTILES	10	0.32	10	11.3
VEG.OIL & VANASPATI	11	0.12	9	25.3

Rank Correlation Coefficient=0.4465**
*: Significant at 10% Level

TABLE 7(B)

POST 85 PERIOD HIGH INTENSITY				
INDUSTRIES	RANK	R&D.L	RANK	C.L
M\C TOOLS	1	2.385	9	44.17
DRUGS & PHARMACEUTICA	2	2.015	10	14.16
TELECOMMUNICATION	3	1.948	4	69.08
MEDICAL APPLIANCES	4	1.622	6	48.87
INDL M\C	5	1.15	3	74.9
FOOD PROCESSING	6	1.116	8	44.37
ELTNC & ELTC EQPT	7	0.919	7	47.1
TRANSPORTATION	8	0.882	2	83.82
CHEMICALS	9	0.719	5	58.44
BOILERS & STEAM GENER	10	0.697	1	96.1
Rank Correlation Coefficient = -0.66*				
LOW INTENSITY				
DYE STUFFS	1	0.618	5	48.63
CEMENT & GYPSUM	2	0.611	8	30.77
COMMERCIAL,OFFICE,	3	0.603	1	77.6
SOAPS,COSMETICS,ETC	4	0.523	4	55.88
PAPER & PULP	5	0.487	2	72.49
SUGAR	6	0.433	11	4.7
METALLURGICAL	7	0.432	3	65
FERTILISERS	8	0.372	6	46.01
TEXTILES	9	0.367	10	8.77
FERMENTATION	10	0.217	7	40.08
VEG.OIL & VANASPATI	11	0.104	9	24.2
Rank Correlation Coefficient = 0.4364**				

*: Significant at 5% Level. **: Significant at 10% Level.

Note: R&D.I = R&D Intensity
Other abbreviations used are same as table 6.
Source: Same as table 6.

Looking at Tables 7 A and B, a sharp distinction in the nature of their relationship across the two categories of industries can be observed. The low intensity industries would appear to benefit from high concentration levels as the rank correlation coefficients are positive and significant. However, for the high intensity industries, the inverse seems to hold good, especially so in the post-1985 period (β=-0.66). This seems to suggest that, high concentration or a monopolistic market structure is

hardly conducive to innovative activity in industries where they really matter.

The growth rate of R & D intensity was ranked and again they were grouped as above. As far as the changes in their levels are concerned, though the co-efficients are negative but insignificant for both periods for the industries whose R & D intensities are fast growing, it is for the low growth industries,that the results are striking (Table 8). They reveal a

TABLE 8 (A)
Association between C.G. and R & D G: (Disaggregated)

INDUSTRIES PRE 85.	C.G.	R&D.G.
HIGH R & D GROWTH		
1 VEG.OIL & VANASPATI	-6.75	75.22
2 BOILERS & STEAM GENERA	-4.56	36.53
3 SUGAR	-12.28	17.98
4 TELECOMMUNICATION	-16.44	8.99
5 ELTNC & ELTC EQPT	9.01	5.71
6 SOAPS,COSMETICS,ETC	3.17	5.62
7 TEXTILES	32.61	5.25
8 CHEMICALS	-10.27	2.41
Correlation Coefficient= -0.25		
LOW GROWTH		
1 METALLURGICAL	-7.56	2.03
2 COMMERCIAL EQPT	-2.34	1.77
3 INDL M\C	-6.21	1.19
4 DRUGS & PHARMACEUTICAL	-30.69	0.76
5 PAPER & PULP	-12.30	-1.90
6 FERTILISERS	42.84	-5.06
7 CEMENT & GYPSUM	-8.66	-9.14
8 TRANSPORTATION	1.64	-12.44
9 M\C TOOLS	38.67	-16.10
Correlation Coefficient= -0.57**		
**: Significant at 10% Level.		

very strong negative and significant association in both periods.

This finding suggests that research intensity decreases with growing concentration levels.

TABLE 8(B)

POST-85 CHANGE	C.G	R&D. G
HIGH R & D GROWTH		
1 COMMERCIAL, EQPT	4.63	41.37
2 FERTILISERS	4.79	23.77
3 CEMENT & GYPSUM	-7.21	18.20
4 CHEMICALS	6.68	12.33
5 METALLURGICAL	3.01	8.80
6 TEXTILES	13.17	7.93
7 TRANSPORTATION	3.94	7.28
8 TELECOMMUNICATION	36.59	5.21
9 ELTNC & ELTC EQPT	6.32	2.66
10 DYE STUFFS	-2.70	2.43
Correlation coefficient=-0.22		
LOW R & D GROWTH		
1 DRUGS & PHARMACEUTICALS	-8.18	-3.64
2 SUGAR	-10.50	-4.79
3 MEDICAL APPLIANCES	-1.36	-7.32
4 SOAPS,COSMETICS,ETC	8.03	-7.37
5 PAPER & PULP	-3.29	-11.85
6 VEG.OIL & VANASPATI	2.51	-14.80
7 FERMENTATION	-11.20	-21.84
8 BOILERS & STEAM GEN	-2.18	-24.32
9 FOOD PROCESSING	18.06	-33.97
10 INDL M\C	15.60	-35.50
11 M\C TOOLS	14.14	-49.25
Correlation Coefficient=-0.705*		
*: Significant at 5% Level		

Note : Abbreviations used are same as table 6.
Source : Same as table 6.

To summarise, it is generally believed that though growth of monopolies would result in a loss of static efficiency, it would compensate by contributing to dynamic efficiency by way of ensuring rapid growth, better innovative performance, etc. But in the case of India, it seems that though concentration is

associated with growth, this growth doesn't seem to have been the result of higher efficiency that the threat of possible entry is supposed to bring about. Instead, this output expansion has taken place only through higher inputs, including technology-embodied capital goods, access to whose imports increased considerably in the late eighties. By way of innovative activity too, monopolistic or concentrated market structures hardly seem to have infused any kind of dynamism. In fact, the analysis points the other way. Given the data limitations and the short time period for which the analysis is carried out, definite conclusions cannot be drawn. Yet, the claims of the proponents of liberalisation on the positive association between concentration and innovativeness are hardly convincing.

Notes and References

1. See Sanjaya Lall, in Fransman M and King K (ed) Technological Capability in the Third World, Mc Millan, London, p:31.

2. Schumpeter's views on this run throughout his books 'Business Cycles' and 'Capitalism, Socialism and Democracy' (1964 and 1975).

CHAPTER VI

SUMMARY

The study has traced the changes in industrial concentration levels for the period 1978-79 to 1990-91 at a disaggregate level for about 110 industries. Further, it also has examined the impact of the policy changes on the growth of aggregate concentration, ie, the growth of big business houses. Finally, the association between market structure and innovativeness during this period of liberalisation has also been examined. These exercises, it was hoped, would indicate the potential of these policy measures in achieving the goals set by the proponents of these measures in making the Indian industry competitive in structure and dynamic in growth.

First, the changes in economy-wide concentration, as measured by the changes in the nature of share of assets of top 20 business houses in the total private corporate sector assets were computed. Two phases could be discerned in the movement of their share. The first phase, 1970 to 1979, was characterised by stability of their share, remaining around 23-24 percent. In the second phase, there was a steady increase, from 23.68% to 32.09 percent in 1985.

Further, an examination of the turnover rate of houses from the top twenty ranks revealed that the houses tended to be more stable in the second period. When 25 ranks were included, it was found that only 2 new houses had moved from the lower

ranks into the top. The minor shuffling was, to a large extent, confined to the lower ten ranks.

Next, the consolidation of assets by the bigger groups within the top twenty was studied. The results of this exercise too confirmed the earlier findings. The share of the top 2 groups, viz., Tatas and Birlas remained at 40% throughout. The share of 10 prominent and stable groups in the top 20 houses' share remained around 51 percent till 1983. However, by 1988, it had risen to 55 percent.

On the whole, these findings seem to indicate that the policy relaxation/changes ostensibly aimed at promoting entry of new firms and inducing the big houses to compete against each other, have been ineffective in curbing the growth of big houses.

The concentration trends in individual product markets revealed that the overall average (three firm) concentration ratios declined marginally by three percentage points during the period under consideration; the concentration level which was about 63 percent in 1978-79 declined to 60 percent by the last year of analysis 1990-91, after which, the average shot up again to 64.1 percent. Moreover, no reduction in the percentage of products with high concentration levels was observed.

To locate the changes in more specific categories, the industries were classified both on the basis of their inputs (16 groups) and on the basis of the end-use (5 groups). In the former

category, the decline in concentration levels was observed in the following industries.

(1) Beverages, tobacco and tobacco products

(2) Wood and wood products

(3) Paper and paper products

(4) Rubber, plastic and petroleum products

(5) Chemical and chemical products.

Among these, only the 'chemical and chemical products' group contained a large number of products. The remaining groups were constituted mostly by two or three products. Even among the chemical products, there was an increase in levels in 1990-91. The rest of the groups were marked either by an increasing trend or stable levels. Use based classification revealed that while the intermediate and consumer non-durable industries witnessed a reduction in concentration levels, the consumer durables and the capital goods industries underwent an increase. In the basic goods industries, the levels were fluctuating.

An examination of concentration trends in the industries, opened to firms subject to MRPT/FERA regulations, as a result of the liberalisation measures showed that their behaviour was no different from that of other industries.

Further, the product groups were classified as per the movement of concentration levels. This exercise too confirmed the general trend observed earlier, ie, in a major proportion of industries, concentration levels had either increased or remained stable.

An interesting result that emerged was that the industries where a decline in concentration ratio occured were largely process industries like chemicals, paper and rubber based industries with significant scale economies. This would imply that economies of scale cannot explain the high concentration levels observed in most industries. A look at the ability of the firm to maintain their ranks within the top three showed that 50 percent of the firms in 1978-79 continued to maintain their positions throughout the period. We have classified these firms into government, foreign, units belonging to Large Business House and other private firms. It was observed that, increasingly, the firms controlled by large business houses had moved up while the other private firms had moved down. The present analysis, thus establishes that the policy changes have not facilitated competitiveness as expected. The decline observed in chemical and related industries might be due to the fact that chemical technology is a standardised one wherein no firm can be a monopoly by virtue of their access to foreign collaboration. On the other hand, industries with high and increasing concentration levels are technologically dynamic and depend largely on foreign collaborations for consolidating their position in the market. Again, the superior marketing power of the firms, might have helped them to establish themselves more firmly in consumer industries. The increase in capital goods industry seems to suggest that, despite liberalisation of imports, foreign collaboration does help accentuate monopoly power. There might be other constraints on new firms to secure foreign collaboration.

Our analysis of the impact of concentration on growth and innovativeness tends to indicate that high concentration levels are not conducive to technical dynamism and growth. In fact, the results show otherwise.

We found that there was a significant and high positive association between initial concentration levels and growth. However, it may be noted that this growth was not due to improvements in productivity, but due to the use of more factor inputs. Next, the association between concentration and R&D intensity was examined. There was no association between initial concentration levels and R&D intensity levels. However, a significant but a weak negative association could be identified between concentration changes and R&D intensity change.

We have grouped the industries on the basis of R&D intensity levels and growth rates and taking 1985 as the cut-off point. The association between the disaggregated groups was examined. As far as the levels were concerned, they were positively associated with R & D intensity levels only for the low intensity ones, suggesting that high concentration levels do not have a positive impact on innovativeness where they really matter. In fact, when the growth rates were correlated, a strong negative relationship between the two variables was observed for the industries in the upper half.

Explanations for this phenomenon are not easy to make. But the implications are not encouraging. The liberalisation measures do not seem to have encouraged any technology adaptive

activities. As imports have been liberalised, there is no incentive for the firms to reduce dependence on foreign collaboration over a period. Jacobsson (1991) has argued that the post-liberalisation phase has been marked by a sudden increase in the number of collaborations. Read together with the above findings, it appears that even if firms compete against each other, competition need not necessary lead to innovativeness. On the contrary, the firms find an easier way out through securing foreign collaboration agreements.

The study shows that concentration, aggregate and industry-wise, has either increased or remained stable in the past 15 years or so. Irrespective of various policy measures over the past 40 years, the large Business Houses have continued to grow relative terms as well. The more recent measures which sought to remove institutional barriers to competition too have failed to promote competition, atleast in the short run. This indicates that there are other structural rigidities which the monopolies use to consolidate their positions. Their control over the capital market, for instance, may be one major mode of using their economic power to thwart entry.

Admittedly, the study has not in any sense analysed the factors contributing to changes in concentration. Such an analysis would require detailed industry-wise studies, nature of policy changes in these industries and their relationship with various elements of market structure.

APPENDIX I*

ASI has divided the factory sector according to (i) Type of Ownership and (ii) Type of Organization.

According to the Ownership criteria, they have been divided into:

A) Wholly Central Government
B) Wholly State/Local Government
C) Central and State/Local Government jointly
D) Public Sector
E) Central Government and Private Enterprise jointly
F) State, Local Governments and Private Enterprise jointly
G) Central, State, Local and Private Enterprise jointly
H) Joint Sector
I) Wholly Private Enterprise
J) Unclassified

Going by the nature of the Organization, they can be classified into:

a) Individual Proprietorship
b) Partnership
c) Public Limited Companies
d) Private Limited Companies
e) Public Corporations
f) Corporate Sector
g) Co-operative Society
h) Others
i) Unclassified

Private Corporate Sector falls under the 'Wholly Private Enterprises' (I) category in the former group.

Private Corporate Sector = Wholly Private Enterprises-(Individual Proprietorship, Partnership and Co-operative Enterprises).

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*Adopted from Shantha, N (1991), 'Trends in Private Corporate Savings', Centre For Development Studies, Trivandrum, pp. 38-39.

APPENDIX II

ASSETS OF TOP 20 BUSINESS HOUSES (In Rs. Crores)

1971		1972	
1. TATA	701.83	1. TATA	641.93
2. BIRLA	496.94	2. BIRLA	589.42
3. MAFATLAL	234.87	3. MAFATLAL	183.74
4. MARTIN BURN	168.42	4. THAPAR	136.16
5. ICI	136.94	5. ICI	135.21
6. THAPAR	129.46	6. ACC	134.36
7. ACC	128.35	7. BANGUR	125.26
8. SRIRAM	113.56	8. SINGHANIA	121.45
9. SINGHANIA	109.08	9. SRIRAM	120.77
10. WALCHAND	96.07	10. SCINDIA	107.73
11. WALCHAND	96.07	11. OIL INDIA	104.04
12. SARABHAI	95.89	12. WALCHAND	99.47
13. MACNEIL & MAGOR	95.34	13. MODI	88.05
14. ESSO	93.96	14. KIRLOSKAR	86.46
15. SCINDIA	87.85	15. SARABHAI	84.44
16. ITC	74.8	16. L & T	79.03
17. KASTURBHAI LALBHAI	73.6	17. KASTURBHAI LALBHAI	78.61
18. KIRLOSKAR	73.57	18. HIND.LEVER	77.87
19. BANGUR	72.85	19. KHATAU	75.44
20. PARRY	69.53	20. ITC	74.65
TOTAL	3148.98	TOTAL	3144.09

1975		1976	
1. TATA	924.41	1. TATA	980.77
2. BIRLA	905.03	2. BIRLA	974.63
3. MAFATLAL	244.23	3. MAFATLAL	256.54
4. SINGHANIA	209.56	4. SINGHANIA	241.23
5. THAPAR	197.9	5. OIL INDIA	202.59
6. SCINDIA	183.05	6. THAPAR	202.24
7. OIL INDIA	182.45	7. ICI	198.99
8. ICI	178.74	8. BANGUR	195.33
9. BANGUR	172.44	9. SCINDIA	177.08
10. SRIRAM	166.16	10. SRIRAM	171.7
11. ACC	160.05	11. BHIWANDIWALA	166.43
12. L & T	137.67	12. ACC	160.21
13. KIRLOSKAR	128.74	13. KIRLOSKAR	152.47
14. WALCHAND	126.78	14. L & T	147.74
15. KHATAU	119.35	15. WALCHAND	129.42
16. BHIWANDIWALA	117.03	16. M & M	126.06
17. ITC	116.8	17. HIND.LEVER	122.51
18. MODI	114.5	18. MODI	117.79
19. M & M	114.08	19. SARABHAI	116.73
20. SARABHAI	110.03	20. MACNEIL & MAGOR	113.35
TOTAL	4609	TOTAL	4953.81

1977

1.	BIRLA	1Ø7Ø.2
2.	TATA	1Ø69.28
3.	MAFATLAL	285.63
4.	SINGHANIA	267.31
5.	THAPAR	215.92
6.	ICI	2Ø9.97
7.	SCINDIA	2ØØ.Ø4
8.	OIL INDIA	199.95
9.	BHIWANDIWALA	189.44
1Ø.	BANGUR	188.24
11.	L & T	185.91
12.	SRIRAM	179.79
13.	ACC	168.86
14.	KIRLOSKAR	16Ø.96
15.	HIND.LEVER	143.59
16.	KHATAU	138.32
17.	SARABHAI	136.96
18.	WALCHAND	132.81
19.	MACNEIL & MAGOR	132.55
2Ø.	M & M	125.49
	TOTAL	54Ø1.22

1978

1.	BIRLA	1171.5
2.	TATA	11Ø2.11
3.	MAFATLAL	317.86
4.	SINGHANIA	299.57
5.	THAPAR	244.Ø7
6.	ICI	228.33
7.	BANGUR	22Ø.86
8.	SRIRAM	2Ø4.79
9.	OIL INDIA	2Ø3.24
1Ø.	SCINDIA	2Ø2.81
11.	L & T	194.51
12.	HIND.LEVER	187.15
13.	ACC	186.62
14.	BHIWANDIWALA	178.88
15.	KIRLOSKAR	176.25
16.	KHATAU	143.12
17.	KASTURBHAI LALBHAI	14Ø
18.	M & M	137.18
19.	WALCHAND	135.7
2Ø.	T.V.S	135.23
	TOTAL	58Ø9.78

1979

1.	BIRLA	13Ø9.99
2.	TATA	13Ø9.38
3.	MAFATLAL	371.Ø6
4.	SINGHANIA	352.53
5.	THAPAR	291.Ø1
6.	SARABHAI	249.52
7.	BANGUR	244.2
8.	ICI	235.55
9.	ACC	211.96
1Ø.	OIL INDIA	211.27
11.	SRIRAM	2Ø8.65
12.	SCINDIA	2Ø2.95
13.	KIRLOSKAR	191.91
14.	HIND.LEVER	187.8
15.	L & T	185.45
16.	MODI	177.Ø8
17.	BAJAJ	168.61
18.	KASTURBHAI LALBHAI	165.98
19.	M & M	165.58
2Ø.	T.V.S	164.77
	TOTAL	66Ø5.25

1980

1.	TATA	1538.97
2.	BIRLA	1431.99
3.	MAFATLAL	427.Ø54
4.	SINGHANIA	412.72
5.	THAPAR	348.Ø6
6.	ICI	343.Ø1
7.	SARABHAI	317.94
8.	ACC	274.51
9.	BANGUR	264.33
1Ø.	SRIRAM	241
11.	KIRLOSKAR	22Ø.37
12.	HIND.LEVER	219.8
13.	L & T	216.Ø3
14.	SCINDIA	212.84
15.	OIL INDIA	2Ø5.88
16.	MODI	198.82
17.	T.V.S	188.64
18.	M & M	186.Ø3
19.	BAJAJ	179.26
2Ø.	KHATAU	169.47
	TOTAL	7596.724

1981			1982	
1.	TATA	1840.16	1. TATA	2430.83
2.	BIRLA	1691.69	2. BIRLA	2004.74
3.	MAFATLAL	535.12	3. SINGHANIA	620.31
4.	SINGHANIA	520.14	4. MAFATLAL	610.69
5.	THAPAR	429.8	5. RELIANCE	512.34
6.	ACC	342.77	6. ACC	473.07
7.	ICI	337.84	7. THAPAR	464.55
8.	SARABHAI	331.23	8. ICI	378.31
9.	BANGUR	280.73	9. SARABHAI	374.21
10.	KIRLOSKAR	278.16	10. MODI	359.2
11.	RELIANCE	270.61	11. KIRLOSKAR	337.35
12.	SRIRAM	269.44	12. BANGUR	336.82
13.	HIND.LEVER	247.21	13. BAJAJ	333.67
14.	MODI	241.9	14. SRIRAM	333.34
15.	SCINDIA	230.38	15. L & T	323.09
16.	T.V.S	226.85	16. ASH.LEYLAND	293.21
17.	M & M	225.14	17. HIND.LEVER	286.72
18.	L&T	220	18. TVS	282.22
19.	BAJAJ	215.02	19. WALCHAND	269.93
20.	I.T.C	207.15	20. M & M	259.53
	TOTAL	8941.34	TOTAL	11284.13

1983			1984	
1.	BIRLA	2830.94	1. BIRLA	3359.04
2.	TATA	2672.4	2. TATA	3120.13
3.	MAFATLAL	694.95	3. SINGHANIA	858.37
4.	SINGHANIA	674.15	4. MAFATLAL	786.6
5.	THAPAR	572.18	5. THAPAR	699.35
6.	ACC	571.36	6. RELIANCE	672.96
7.	RELIANCE	562.98	7. MODI	610.3
8.	SARABHAI	444.61	8. ACC	554.16
9.	L & T	423.71	9. BANGUR	508.84
10.	MODI	410.5	10. L & T	480.79
11.	BAJAJ	383.99	11. SARABHAI	462.88
12.	WALCHAND	383.63	12. BAJAJ	425.97
13.	ICI	375.42	13. ICI	425.52
14.	KIRLOSKAR	362.46	14. M & M	408.17
15.	TVS	357.22	15. SRIRAM	406.69
16.	SRIRAM	356.93	16. WALCHAND	405.01
17.	ITC	355.71	17. KIRLOSKAR	397.81
18.	BANGUR	350.39	18. ITC	393.15
19.	HIND.LEVER	303.89	19. TVS IYENGAR	387.25
20.	M & M	292.19	20. HIND.LEVER	381.81
	TOTAL	13379.61	TOTAL	15744.8

1985

1.	BIRLA	4111.85
2.	TATA	3698.84
3.	THAPAR	1067.86
4.	SINGHANIA	1057.03
5.	RELIANCE	1056.36
6.	MAFATLAL	964.6
7.	MODI	818.86
8.	M.A.CHIDAMBARAM	773.27
9.	ACC	742.68
10.	L & T	714.93
11.	BANGUR	650.87
12.	BAJAJ	619.87
13.	WALCHAND	607.18
14.	SRIRAM	541.78
15.	T.V.S	519.3
16.	ICI	446.96
17.	SARABHAI	444.83
18.	HIND.LEVER	435.96
19.	KIRLOSKAR	433.01
20.	M & M	431.19
	TOTAL	20137.23

1988

1.	BIRLA	5564
2.	TATA	5559
3.	RELIANCE	2033
4.	SINGHANIA	1566
5.	THAPAR	1317
6.	MAFATLAL	1131
7.	BAJAJ	954
8.	L & T	931
9.	MODI	903
10.	M.A.CHIDAMBARAM	867
11.	HIND.LEVER	775
12.	T.V.S	767
13.	ACC	759
14.	SRIRAM	685
15.	BANGUR	652
16.	WALCHAND	592
17.	ITC	567
18.	ICI	537
19.	KIRLOSKAR	518
20.	UB	489
	TOTAL	27166

1989

1.	BIRLA	6974
2.	TATA	6621
3.	RELIANCE	3241
4.	SINGHANIA	1829
5.	THAPAR	1763
6.	MAFATLAL	1297
7.	BAJAJ	1228
8.	L & T	1192
9.	MODI	1130
10.	M.A.CHIDAMBARAM	1032
11.	HIND.LEVER	929
12.	T.V.S	925
13.	ACC	909
14.	SRIRAM	799
15.	BANGUR	742
16.	WALCHAND	716
17.	ITC	674
18.	ICI	657
19.	KIRLOSKAR	633
20.	UB	626
	TOTAL	33917

BIBLIOGRAPHY

Aaranovitch, Sam and Sawyer, C., Malcolm (1975) Big Business: Theoritical and Empirical Aspects of Concentration, The Macmillan Press Ltd., London.

---------- and Ron Smith. (1989), The Political Economy Of British Capitalism, McGraw Hill Ltd (UK).

Abramovitz, M. (1956), 'Resources and Output Trends in the United States Since 1876', American Economic Review Papers and Proceedings, May.

Adams W.J. (1970) Firm Size and Research Activity: France and the United States, Quarterly Journal of Economics, 84, 386-409.

Adelman M.A. (1958) The Measurement Of Industrial Concentration Readings in Industrial Organisation & Policy, Richard Irwin, Illinois.

Agnew, John H. (1985) Competition Law, Allen and Unwin, London.

Ahluwalia, I.J. (1985) Industrial Growth in India: Stagnation since the Mid-sixties, Oxford University Press, Delhi.

---------- (1991) Productivity and Growth in Indian Manufacturing, Oxford University Press, Delhi.

Apte.P.G and Vaidhyanathan.R., Concentration, Controls & Performance in 29 Manufacturing Industries in India, Indian Economic Review, Vol.17, No.2-4.

Arrow, K. (1962) Economic Welfare and the Allocation of Resources for Inventors. In R.R. Nelson (ed.) The Rate and Direction of Inventive Activity. Princeton, N.J. Princeton University Press.

Bagchi, A.K. (1967) 'Concentration of Economic Power in India', Economic and Political Weekly, Speicla Number, August.

---------- (1975a) Private Investment in India 1900-1939, Orient Longman Ltd., Madras.

Bagchi, A.K. (1975b) 'Some Characteristics of Industrial Growth in India', Economic and Political Weekly, Annual Number, February 1975.

Bain, J.S. (1956) Barriers to New Competition, Cambridge, Massachusetts.

---------- (1970) 'Changes in Concentration in Manufacturing Industries in the US, 1954-66 : Trends and Relationships to the Levels of 1954 Concentration', Review of Economics and Statistics, November, 1970.

Baran P. and Sweezy P. (1966) Monopoly Capital, Penguin Books.

Baran, Paul A. (1976) The Political Economy of Growth, Penguin Books Ltd., Harmondworth, Reprinted.

Berle A.A. and G.C. Means, (1932) The modern Corporation and Private Property, New York.

Bhagwati, J. and Desai.P (1970) India: Planning for Industrialisation, New York.

---------- and Srinivasan, T.N. (1975) Foreign Trade Regimes and Economic Development, Columbia University Press, New York.

Bhat, V.V. (1970) 'Monopoly and Public Policy', Economic and Political Weekly, May 30.

Blair, J.M. (1972) Economic Concentration - Structure, Behaviour and Price Policy. New York, Harvourt, Brace Jovanorich Inc.

Blair Kling (1966) "The origins of the Managing Agency System in India', Journal of Asian Studies, XXVII (I), pp. 37-48.

Brozen, Yale (1982) Concentration, Mergers and Public Policy, Macmillan, New York.

Brunner, J. (1975) 'Industrial Analysis Revisited', in P.W.S. Andrews and Elizabeth Brunner (ed), Studies in Pricing, London, 1975.

Caves, Richard (1969) American Industry: Structure, Conduct, Performance. A.H. Wheeler and Co., Allahabad.

Centre for Monitoring Indian Economy (1991), The Liberalisation Process, February.

Chalapathi Rao K.S. (1985), 'A Study Of Interconnections under the MRTP Act in the Context Of The Proposed Asset Limit Hike', Economic and Polictical Weekly, Vol:20, No:27, July6.

Chamberlain, E.H. (ed.) (1954) Monopoly and Competition and their Regulation - Papers and Proceedings of a Conference held by the International Economic Association, London.

Chandra, N.K. (1977a) Role of Foreign Capital in India, Social Scientist, V, April.

---------- (1977b) 'Monopoly Legislation and Policy in India, Economic and Political Weekly, Spl. No. Aug.

---------- (1979) 'Monopoly Capital, Private Corporate Sector and the Indian Economy', A Study in relative growth, 1931-76", Economic and Political Weekly, Special Number (1979), pp. 1245-1272.

Chandrasekhar C P (1984)'Growth and Technical Change in Indian Cotton Mill Industry, Economic and Political Weekly, 1984, PE 22-PE 39.

Chaudhari, Asim (1966) "Oligopoly and Industrial Research in India", Indian Economic Journal, Conference Volume, December, Bombay.

---------- (1972) 'Industrial Licensing Policy and Prevention of Concentration of Ecomomic Power in India - A Critical Review', Artha Vijnana, XIV, December.

Comanci W.S. and Wilson, T.A. (1967) 'Advertising, Market Structure and Performance", Review of Economics and Statistics, XLIX, November.

Curry B. and George K.D.(1983), 'Industrial Concentration: A Survey', Journal of Industrial Economics, Vol. XXXI, March, 1983.

Desai, Ashok V (1983) 'Technology and Market Structure under Government regulation: A Case Study of Indian Textile Industry', Economic and Political weekly, 18, 150-60.

---------- (1984) Market Structure and Technology : Their Interdependence in Indian Industry, ICRIER Working Paper No. 13. Also published as WEP Working Paper No. 117, ILO, Geneva.

---------- (ed.) (1986) Technology Adoption in Indian Industry, New Delhi, Wiley Eastern.

---------- (1988) Technological Performance in Indian Industry: The Influence of Market Structures and Policies', in Ashok V Desai (ed.), Technology Absorption in Indian Industry, Wiley Eastern, N.Delhi

EPW (Unsigned) (1974a) "Sirkar Commission : Preemption of Institutional Finances - Procedural led Hervings, February 2.

---------- (1974b) "Sarkar Commission : Public Money for Private Empires", January 12, 1974.

Evely, R.W. and Little, I.M.D. (1960) Concentration in British Industry, Cambridge, England.

Frankena, M. (1974) 'The Industrial and Trade Control Regime and Product Designs in India', Economic Development and Cultural Change, Vol. 22, No.2, January, pp. 249-64.

Fransman, M (1985)'Conceptualising Technical Change in the Third World in the 1980s: An Interpretive Survey', Journal of Development Studies, 21, 572-652.

---------- (1986) Technology and Economic Development, Wheatsheaf Books Ltd, Sussex.

Fuchs, V.R. (1961) "Integration, Concentration and Profits in Manufacturing Industries", Quarterly Journal of Economics, LXXV, No.2, May 1961.

Gadgil, D.C. (1955) "Indian Economic Organisation", in Kuznets S. and others (eds.) Economic Growth: Brazil, India, Japan, Durham N.C., Duke University Press.

Galbraith, J.K. (1952) American Capitalism : The Concept of Countervailing Power, Boston, Honghton Mifflin Company.

George, Kenneth, D. (1971) Industrial Organisation, George Allen and Unwin Ste., London.

Ghose, Aurobindo (1972) 'Monopoly in Indian Industry: An Approach', Economic and Political Weekly, Annual Number.

---------- (1974) 'Role of Large Industrial Houses in Indian Industries - 1948-1968', Indian Economic Journal, XXI, No. 4-5, April-June.

---------- (1974) 'Joint Sector and Control of Induan Monopoly', Economic and Political Weekly, IX, June 8.

---------- (1975) 'Concentration and Growth of Indian Industries, 1948-1968', Journal of Industrial Economics, XXIII, March.

Globerman S. (1973) Market Structure and R&D in Canadian Manufacturing Industries, Quarterly Review of Economics and Business, 13, 59-67.

Goldsmith, Harvey J.H. Michael Mann and J.Fred Industrial Concentration: the new learning ,Custon (eds.), Little, Brown and Company, Boston.

Gort, Michael (1962) Diversification and Integration in American Industry, Princeton, Princeton University Press.

Goverment of India (1964), Committee on Distrition of Income and Levels of Living (P.C. Mahalanobis).

---------- (1965), Monopolies Inquiry Commission (K.C. Dasgupta).

---------- (1967), Study of Industrial Planning and Licensing Policy (R.K. Hazari).

---------- (1969), Industrial Licensing Policy Inquiry Committee (S. Dutt).

---------- (1978a), High powered Committee on Companies and MRTP ACt (Rajinder Sachar).

---------- (1978b), Report of the Study Group on Industrial Regulations and Procedures (G.V. Ramakrishnan).

---------- (1986), Report of the Committee to Examine Principles of Possible Shift from Physical to Financial Controls (M. Narasimham).

Goyal, S.K. (1979) "Nature and Growth of the Indian Private Corporate Sector", Brij Narain Memorial Lecture, Punjab University, Chandigarh.

---------- (1979), Monopoly Capital & Public Policy: Business & Economic Power, Allied Publishers.

Gumaste, Vasant (1988) 'Anatomy of In-house R and D: A Case Study of Indian Automobile Industry', Economic and Political Weekly, 23, 22, M 67-M 72.

Hannah and Kay, J.A. (1977) Concentration in Modern Industry: Theory, Measurement and the U.K. Experience, Macmilan, London.

Hart, P.E. (1975) 'Moment Distributions in Economics: An Exposition, Journal of the Royal Statistical Society, Series A, 138, Part 3. pp. 73-85.

---------- and Prais, S.J. (1956) "The Analysis of Business Concentration: A Statistical Approach', Journal of the Royal Statistical Society, Series A, 119.

Hazari, R.K. (1966) The Structure of the Private Corporate Sector, Asia Publishing House, Bombay.

---------- (1986) Essays on Industrial Policy, Concept Publication House, New Delhi.

Hilferding, R. (1981) Finance Capital, Routledge and Kegan Paul, London.

Hunter, A. (ed.) (1971) Monopoly and Competition, Penguin Modern Economic Readings, Reprinted.

Jacobsson, Staffan, (1991) 'Government Policy and Performance fo the Indian Engineering Industry', Research Policy, Vol 2Ø, pp. 45-56.

Joseph, K.J. (1992) 'Market Segmentation and Firms Performance: Case of Indian Television Industry', Centre For Development Studies, Trivandrum (Mimeo).

Katrak, Homi (1986) 'Imported Technologies and R and D in a Newly Industrialising Country: the experience of Indian Enterprises', mimeo, University of Survey.

Kefauver, E. (1965) In a Hew Hands: Monopoly Power in America, London.

Khurana, Rakesh 'Growth of Large Business: A Trojan Horse', Economic and Political Weekly, Wiley Eastern, Delhi.

Kidrom Michael (1965), Foreign Investments in India, OUP.

Kuhne, Karl (1979), Economics & Marxism, Vol:1, MacMillan Press Ltd. 1979.

Kumar, Nagesh (1987),'Technology imports and Local Research and Development in Indian Manufacturing', The Developing Economies, 25, 3, 22Ø-23.

Lall, Sanjaya (1979)'Multinational Corporation and Concentration: The Case of Pharmaceutical Industry', Social Scientist, Vol. VII, No. 8-9, March-April.

---------- (1983) 'Determinants of R and D in an LDC', Economic Letters, 13, 379-83.

---------- (1987) Learning to Industrialise: The Acquisition of Technological Capability by India, London, Macmillan Press.

Lenin, V.I, (1948) Imperialism, Lawrence and Wlshort, London.

Lenner, A. (1933)'The Concept of Monopoly and Measurement of Monopoly Power', Review of Economic Studies, I.

Machlup, Fritz (1952) The Political Economy of Monopoly, Baltimore.

Maharatna Arup (1989) The Indian Economic Journal, Vol. 37, No.2, p. 93-1Ø2.

Mani, Sunil (1985) "Concentration and Market Power in Indian Automotive Tyre Industry", Economic and Political Weekly, Review of Management, Vol. XX, No. 21, (May 25), pp. M. 53- M. 64.

Mann, H.M., (1966) Seller Concentration, Barriers to entry and rates of return in thirty industries, 195Ø-196Ø, Review of Economics and Statistics, No. 3 (August), 296-3Ø7.

Mansfield, Edwin (1963)'Size of Firm, Market Structure and Innovation', Journal of Political Economy, Vol. LXXI, No. 6, December.

---------- (ed.) (1964) Monopoly Problem and Economic Performance: The Problem of Industrial Concentration, New York, W.W. Norton and Company, Inc.

---------- (ed.) (1968) The Economics of Technological Change, New York, W.W. Norton and Company.

Markham, J.W. and Papanek, J.F (197Ø) Industrial Organisation and Economic Development, In Honour of E.S. Mason, Houghten Mifflin Company, Boston.

Markovits Claude.(1985), Nationalist Politics & Business in India 1931-39, Cambridge South Asian Studies, Orient Longman, Hydrabad.

Mason, E.S. (1967) Monopolistic Competition and the Growth Process in LDCs : Chamberlin and the Schumpeterian Dimension, in R.E. Kuenne, (ed.) Monopolistic Competition Theory: Studies in Impact, New York, John Wiley and Sons.

Mckie, W James. (1970), 'Market Structure & Function: Performance vs Behaviour in J.W. Markham and G.F. Papanek (ed) Industrial Organisation & Economic Development, Houghton Mifflin Company, Boston.

Merhav, Meir, (1969) Technological Dependence, Monopoly and Growth, Pergamon Press, Oxford.

Mohnot, S.R. (1962) Concentration and Economic Power in India : A Statistical Study of Concentration and diffusion of Economic Power in India, Allahabad.

Morehouse, Ward (1980) 'Technology and Enterprise Performance in the Indian Tractor Industry: Does Self-Reliance Measure Up?', Economic and Political Weekly, 15, 51, 2139-52.

Morris. D. Morris., (1984) The Growth Of Large scale Industry upto 1947, Cambridge Economic History of India, Vol.2, c 1757- c.1970, pp. 553-676, Orient Longman, Hyderbad,

Mueller, W.F. and Hemm, L.G. "Trends in Industrial Market Concentration", Review of Economics and Statistics, LVI, November.

Mukerjee Aditya (1976), The Indian Capitalist Class & The Public Sector,1930-1947 Economic and Political Weekly, Jan 17, 1976.

Namjoshi, M.V. (1966) Monopolies in India: Policy proposals for a Mixed Economy, Bombay, Lalvani Publishing House.

Nanekar, K.R. (1966) 'The Vicious Circle of Monopoly', Indian Economic Journal, Conference Volume, December, Bombay.

Nightingale, J. (1978) 'On the Definition of "Industry" and "Market", Journal of Industrial Economics, XXVII, Sept. pp. 1-12.

Paranjape, H.K. (1978) Control in India of Restrictive Business practices, U.N., (Reprinted by CIEI, Bombay).

---------- (1980) New Statement on Industrial Policy: A Rat out of a Mountain's Labour', Economic and Political Weekly, XV, September 20.

---------- (1984) The MRTP Amendment Bill: A Trojan Horse, Economic and Political Weekly, pp. 715-76.

---------- (1985) 'New Lamps for the Old: A Critique of the New Economic Policy' Economic and Political Weekly, Vol. XX, No. 76, September, pp. 1513-1522.

---------- (1986) 'The MRT Act: A Review 1970-1983" in S. Guham and M. Shroff (eds) Essays in Economic Progress and Welfare, oxford University Press, Delhi, pp. 59-76.

Penrose, E. (1956) 'Towards a Theory of Industrial Concentration', Economic Record, XXXII, May.

Philips, A. (1956) 'Concentration, Scale and Technological Change in Selected Manufacturing Industries 1899-1939'. The Journal of Industrial Economics, IV, June.

Prakash, Vinod (1967) Industrial Concentration and Countervailing Power', Indian Economic Journal, Vol. 14, January, Bombay.

---------- (1966) On Measure of Product-wise Concentration, Artha Vijnana, VIII, September, Poona.

Ranganekar, D.K. (1982) "Growth of Big Business Houses", Business Standard, Annual, pp. 9-18.

Rosenberg, J.B. (1976) 'Research and Market Share : A Reappraisal of the Schumpeterian Hypothesis', Journal of Industrial Economics, 25, 110-112.

Rosenberg, N. (1976), Perspectives on Technology, Cambridge University Press.

Rosenbluth, G. (1959) Concentration in Canadian Manufacturing Industries, Princeton University Press, Princeton.

Roy Ajit.(1976), Monopoly Capitalism In India, Naya Prokash, Calcutta.

Sachs, Ignacy (1964) Patterns of Public Sector in Underdeveloped Economics, Asia Publishing House, Bombay.

Sandesara, J.C. (1966) 'A Critrique of the MIC's Report', Indian Economic Journal, XIII April-June.

---------- (1979) "Size of the Factory and Concentration in the Factory Sector in India, 1951-70", Indian Economic Journal, Vol. 27, No.2, (October-December, pp. 1-34).

Sawyer, M.C. (1971) 'Concentration in British Manufacturing Industry', Oxford Economic Papers, New Series, XXIII, November.

Scherer, F. M. (1967) 'Research and development, Resource, Allocation under Rivalry', Quarterly Journal of Economics, 81, 359-94.

---------- (1980) Industrial Market Structure and Economic Performance, Chicago, Rand McNelly, 2nd ed.

Shantha, N (1991), 'Trends in Private Corporate Savings', Centre For Development Studies, Trivandrum.

Sharad S Marathe, (1986) Regulation and Development: Indian Policy Experience of Control over Industry, Sage Publications, New Delhi.

Shumpeter, J.A. (1964) Business Cycles, New York, Mc Graw Hill.

---------- (1975) Capitalism, Socialism and Democracy, New York, Harper & Row, Harper Colophen ed.

Siddhardhan, N.S. (1981) Conglomerates and Multinationals in India, A Study of Investment and Profit, Allied Publishers, New Delhi.

---------- (1988) 'In-house R and D, Imported Technology and Firm Size: Lessons from Indian Experience, The Developing Economics, 26, 3, 212-21.

---------- and A.K. Dasgupta (1983) Entry Barriers, Exports and Inter-industry Differences in Metabolity', Developing Economics, 21, 1 March.

Solow, R (1957), 'Technical Change and the Aggregate Production Function', Review of Economics and Statistics, August.

Subrahmanian K.K. (1971a) 'Market Structure and R and D Activity: A Case Study of the Chemical Industry', Economic and Political Weekly, August, M 115-M 118.

---------- (1971b) 'Determinants of Corporate R and D', Economic and Political weekly, November M, 169-M 1971.

---------- (1978) 'Approach to Foreign Collaboration: A Critique of Industrial Policy', Economic and Political weekly, April 8.

---------- (1986) 'The Technology Import: Regulation Reduces Cost', Economic and Political Weekly, 21, 32, 1412-16.

---------- (1991) 'Technological Capability under Economic Liberalism: Experience of Indian Industry in Eighties' Economic and Political Weekly.

---------- and Anandaraj R, (1992) 'Technological Change in Indian Industry - A Review of Conceptual and Measurement Problems', Papers and Proceedings, Seminar on Methodology of Applied Economic Research, University of Madras, Madras.

---------- and Pillai, Mohanan P.(1977) "Rhetoric and Reality of Technology Transfer", Social Scientist, Sp. No. 617, January, February.

---------- and Pillai, Mohanan, (1979) Multinationals and Indian Export, P.Allied Publishers Private Ltd., New Delhi.

Swaminathan, Padmini. (1982) Product Concentration in Indian Industry, Unpublished P.hd Thesis, Bombay University, Bombay.

---------- (1983a) A Study of Production Concentration in Indian Industry - A Statistical Analysis, Working Paper No. 36, MIDS, Madras.

---------- (1983b) Concentration in Productive Capacity, Working Paper No. 45, MIDS, Madras.

---------- (1985) The MRTP Act 1969 and Concentration of Economic Power, Working Paper No. 58, MIDS, Madras.

Sylos Labini, P. (1969) Oligopoly and Technical Progress, Cambridge, Massachusettes.

Usher, D (1964) The Welfare Economics of Invention, Economics NS, 31, 279-87.

Vaidyanathan, A (1984) 'The Indian Economy Since Independence (1947-70)', Cambridge Economic History of India, Vol.2, c 1757- c.1970, pp. 947-994, Orient Longman, Hyderbad.

Verma, D.P.S. (1985) Monopolies Trade Regulation and Consumer Protection, Texts and Cases, Tata McGraw Hill Publishing, New Delhi.

Whittington, G. (1952) Changes in the Top 100 Quoted Manufacturing Companies in UK, 1948 to 1968, Journal of Industrial Economics, November.

World Bank, (1986a), India: Industrial Regulatory Policy Study, Vol. I & II, Main Report, December.

---------- (1986b), Review of Industrial Licensing Policy (1951-85), Working Paper. VII, in support of Chapter 2 of the Report, India: Structural Change and Development Perspectives, Report No. 5593-IN, dated April 24, 1985.