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CONCENTRATION IN INDIAN INDUSTRIES, 1948-1968

by

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CHAPTER I

INTRODUCTION

The problems of economic concentration and monopoly power in major industries are subjects of continuous discussions in India.[1] Time and again the question has been raised in the Indian Parliament, in academic circles and in the daily press. It has been frequently asserted that in the industrial field concentration by big business has increased and economic power has been deposited into fewer hands. The Mahalanobis Committee (October, 1960) was appointed to probe into the impact of planning on the distribution of income and the level of living, and the Monopolies Inquiry Commission (April, 1964) examined the concentration of economic power and the patterns of concentration in Indian industries.[2] Both concluded that neither the concentration of income nor economic power had increased during the planning decade (1951-1961). Our main aim is to re-examine the second question more intensively than before. The objective of this research effort is to determine whether concentration in the principal Indian manufacturing industries had increased during the twenty

years from 1948 to 1968, and the extent to which industrial concentration had been associated with economic growth. By studying this longer sweep of years we hope to shed new light on the current controversy and their implications for possible policy changes.

In the Indian economy, the problem of economic concentration has been present from the early inception of the industrialization process. At the nascent stage of its development, the British were mainly interested in the development of (1) high-profit consumer goods catering mainly to the indigenous elite class and (2) industrial products for export to Britain.[3] Thus they employed their resources heavily on the traditional export sector with the production of jute, cotton, tea, sugar, paper, cement, and mineral resources. Out of this grew the Managing Agency System, a unique system of industrial venture, the organization of which is found in India alone.[4] Where indigenous capital was scarce, risk was high and the future uncertain, the Managing Agency System promoted, financed and managed the industrial concerns in the traditional sectors and extended these functions to other areas.[5] The managing agents thus served a useful role in the growth of Indian industries--in effect they were the captains of industrial ventures.

In independent India, however, the Managing Agency System has become antiquated and obsolete. With the planned development drive in Indian industries under the Five Year Plans it has been found that the Managing Agency System has hindered growth instead of fostering it.[6] This results from its concentration of economic power and by its deliberate policy of resisting new entry. This has been accomplished by manipulating licensing requirements for new establishments and monopolizing the limited number of talented managers of indigenous origin. The evils of economic concentration and monopoly power have become great, and the question of disposing of the whole system has arisen, with the recent legislation of phased abolition of the system after 1970.[7] Thus any study of the economic concentration and monopoly problems in Indian industries during the last two decades can not avoid examining the Managing Agency System, and our research will delve, among other things, into the roles of managing agents and the large industrial houses in the industries covered.

Causes of Economic Concentration

There are many causes for the high degree of economic concentration in Indian industries in the hands of managing agents or large firms controlled by a few industrial houses. To start with, India's effort for industrial development from

the early period of nineteenth century was undertaken by British entrepeneurs who, with the help of British Government Charters to do business in overseas colonies started industrial ventures by floating the joint-stock companies in India and England.[8] The evolution of the corporation with capital supplied by many investors made it possible for these entrepeneurs to achieve important economies of scale. As the holdings of shares were dispersed and the numerous shareholders preferred to leave the decision-making and management to the few who started the ventures, the result was that the acquisition of a minority of shares not infrequently was sufficient to achieve control of a company. The attributes of skill and enterprise which helped the entrepeneurs to acquire a commanding position in one or two concerns encouraged them in the process of interlocking of funds and directorates to many other concerns in similar or different lines of business. "So it frequently happened that an industrialist contributing a small amount of capital himself was able to obtain control of big enterprises and the snowballing process gathered strength as it proceeded."[9]

Concurrent with the above developments there evolved the Managing Agency System, peculiar to India alone. The essence of this system lies in the fact that it entrusted the management of the corporation--subject to only a formal control by the Board of Directors, itself selected mainly by the

Managing Agent, in return for payment for services. And for all practical purposes the Board of Directors, itself selected mainly by the Managing Agent, surrendered to the latter the power of the control which in other countries they themselves exercise. In the early years of India's industrial development when managerial skill was in short supply, many British business houses became managing agents of large numbers of companies incorporated in India. Indians with capital, business acumen and talents for management were not slow to follow this example and gradually a large number of Indian companies came to be managed by Managing Agencies.[10] As Dr. P. S. Lokanathan pointed out so succinctly, prior to independence India owed her industrial development to a unique system of organization, namely, the Managing Agency System which was designed to overcome persistent shortage of entrepreneurship, risk capital and managerial talents.[11] But the system, by its very nature, led to economic concentration in the hands of a few family groups that happened to be the early pioneers. They spread their activities across industry lines, though different agency houses also competed with each other in the same industries.

Developments during World War II also led to an increase in concentration in Indian industries, with all kinds of production geared to war requirements. Prodded and encouraged

by the Government, some of the leading industrialists seized this opportunity to expand capacity of their existing production facilities and also to launch new units of production. Thus, in the period immediately following India's independence in 1947, the very forces that were harnessed to produce the quick industrialization of the country worked at the same time to concentrate economic power in a few individuals or families who were already wealthy and powerful. This was enhanced by the selling of many British firms and managing agencies who opted to leave the country. These, in the main, were transferred to the hands of few wealthy well-known Indian industrialists, thus causing a further increase in concentration.[12]

The advantages big business had over smaller competitors in seeking assistance from banks and other financial institutions was another factor in the increase in industrial concentration. Many large industrial houses had their family members sitting on the boards of directors of commercial banks and some actually owned large banks. Birlas controlled the United Commercial Bank, Sahu Jain the Punjab National Bank, and Thapar the Oriental Bank of Commerce.[a] As the capital market usually favored the big firms which were considered

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[a]In 1970, these banks were nationalized along with eleven other Indian commercial banks.

better risks and in a better financial shape, their ventures were assisted more fully than were those of smaller firms. Thus among the three principal variables which determine concentration, as mentioned by Professor Bain,[13] economies of scale and absolute cost advantage particularly in financing were of much greater importance than was product differentiation which was minimal in an underdeveloped country like India.

Finally, the very process of economic planning since its inception in 1951 had encouraged economic concentration to increase in Indian industries. With the virtual shutting off of foreign imports, the drive for import substitution had given large industrial houses great opportunities to expand their production and marketing facilities in diverse areas. As foreign competition ceased to exist as a viable force and domestic competition was confined to a few giant firms in a situation of rapidly expanding market, competition by small firms was weakened in many industries due to the imperfections in the capital market and the dearth of entrepreneurship among small firms. The industrial licensing system restricted freedom of entry and helped already big and well-entrenched firms to expand or open up new production facilities, as the Industrial Licensing Committee had reported.[14] As big firms were able to secure foreign collaboration in a tight foreign

exchange situation, they were awarded more licenses, thus enhancing industrial concentration further during this period of planned economic development.

Government Efforts to Curb Concentration

As mentioned above, the Managing Agency System had been a principal source of industrial concentration in India. It was not so much that a few large firms under different managing agencies constituted a very high degree of concentration in an industry, but that more than one firm was controlled by a single managing agency in the same industry. These multi-firm mamaging agencies in important Indian industries like cotton, jute, sugar, paper and cement had virtually dominated these markets, and the system, by its very nature, aided concentration in the hands of a few family groups.[15] Obviously, the first attempt of the Government to reduce economic concentration was to curb the influence and the activities of the managing agents. For this, the Indian Companies Act of 1913, which had never been enforced in any meaningful way, was amended in 1935 so that (i) no managing agent could hold office for more than twenty years which, however, could be renewed on approval, and (ii) the number of directorships and interlocking of funds under the same managing agent were to be restricted. But this amended Act. like the original one, was never vigorously enforced. Thus one of the first

things the Government of India did after independence was to appoint an expert committee under Sir Homi Bhaba in 1950 to discuss the whole raison d'etre of the Managing Agency System. Meanwhile, the Amendment of the Companies Act (1951) laid down that all changes in managing agencies, including their first appointment and subsequent extension, could take place only after approval was obtained from the Central Government.

We can distinguish three phases of policy formulations by the Government of India after 1947. First, in order to determine the pattern of future growth of the Indian economy, the Industrial Policy Resolution of 1948 stipulated the respective spheres of future activities by public and private sectors in the mixed economy framework. Defense-oriented and basic industries like shipbuilding, aircraft, iron and steel, etc., would be developed by the Government sector while the consumer goods industries would fall under the private sector. This was followed by the Industries (Development and Regulation) Act passed in 1951 (and amended in 1953) which provided wide powers to the Central Government for control and regulation of private enterprises. Its chief feature was the provision that the existing industrial enterprises were to be registered and new ones could be started provided they got license from the Government.[16]

With the launching of the Second Five Year Plan in 1956, the second phase of industrial regulation by the Government began. A new Industrial Policy was announced in 1956 which narrowed down the spheres of activities of the private sector and broadened the base of public sector in heavy industries. By that time, the Bhaba Committee's Report on the Managing Agency System had been received, and so the Indian Companies Act of 1956 was passed by the Indian Parliament. The chief features of this act were, first, the appointment or reappointment of managing agents by a company must be approved first by the company itself at a general meeting, and then by the Central Government; the managing agent could not be appointed for the first time for a period of more than 10 years at a time. Second, no person could at the same time hold office as managing agent in more than 10 companies in the same or different industries, and insolvent and convicted agents would not be allowed to continue in office. Third, the managed companies were not allowed to have the same managing agent, secretaries and treasurers both at the same time. Managing agents were allowed to receive by way of remuneration up to 10 per cent of net profits, secretaries and treasurers up to 7½ per cent, while managers could receive up to 5 per cent of the net profits; any sum in excess of 10 per cent to be paid to the managing agent needed sanction from the managed

company by means of a special resolution, provided the Central Government had no objection to that recourse. Finally, restrictions had also been imposed on the grant of intercompany loans under the management of the same managing agency firms, purchase by the company of shares of other companies in the same group, and engagement by a managing agent in business competing with the business of the managed company.[17]

The third phase of Government legislation for the regulation of industries started with clamor in press and the Parliament in 1961 that the preceding decade of economic planning (1951-1961) had increased the concentration of economic power in the hands of few industrialists and that the poor had become poorer and the rich richer.[18] The Mahalanobis Committee, appointed by the Government, was asked to ascertain, among others, the extent to which the operation of the economic system had resulted in the concentration of wealth and means of production. Since the Committee relied on the already existing meager data and did not collect any first-hand data, the conclusion reached did not add anything new, and ended up with the remark that concentration had neither increased nor decreased during this decade.[19] But the Committee's conclusion that, ". . . concentration of economic power in the private section is more than what could be justified as necessary on functional grounds", is highly unsatisfactory. They did not

explain what degree of concentration could be tolerated as "necessary", nor did they make any study on the relationship between growth and concentration to judge the level of concentration on "functional" grounds. No study was attempted to relate structural variables with industrial performance to arrive at the above-mentioned conclusion.

The appointment of the Monopolies Inquiry Commission by the Government in 1964[20] was the most comprehensive attempt ever made in India to probe into the problems of economic concentration in industries and necessary policy formulation to rectify abuses of economic power deposited in a few hands. The Commission's Report, submitted in 1966, was a mine of information about concentration in Indian industries and the economic power wielded by large industrial houses. But the conclusion reached by the Commission did not contain discussions about appropriate changes in industrial concentration, and mainly described the level of economic concentration in 1964. The Commission was mainly interested in formulating a monopolistic and restrictive practices bill. This, along with the Report of the Industrial Licensing Policy Inquiry Commission,[21] became the basis for the subsequent Monopolies and Restrictive Practices Act in 1969.

The main criticism of past laws is that whatever little power the laws had in curtailing the practices of the managing

agents, enforcement of these laws had not been seriously attempted. There were severe omissions in the laws too. For example, it had been pointed out that the provision of Secretaries and Treasurers in the Companies Act of 1956 would mean that, even if the Managing Agency System was abolished in the future, the old managing agents would assume the new name of "Secretaries and Treasurers" and would continue to exercise the same control over the previously managed companies.[22] It has been reported now that the managing agency firms of various families have been appointed as "Secretary and Registrar", "Sales Organizers" and "Commercial Consultants"; there has also been a sudden and marked growth of "consulting organizations" in large industrial groups.[23] If this trend continues, these consulting organizations would prove to be one more way of siphoning off the earnings of public limited companies into companies owned wholly or largely by members of controlling families.

A Review of Existing Literature

Although a high degree of concentration by a few big firms has been characteristic of the Indian economy from the inception of its industrialization, studies done to probe this phenomenon have been few and far between. Professor M.M. Mehta's book on the structure of Indian industries was the first scientific attempt to discuss the size structure of

important Indian industries (namely, cotton, jute, sugar, iron and steel, paper, cement and coal), and their changes over time.[24] His discussion of the changes in frequency distribution of firm-size during 1905-1951 for these seven industries was quite illuminating. His conclusions were: (i) for the period covered there had been a general spurt of industrial units into larger and large sizes; (ii) the mortality rate among small-sized units in each industry was much higher than among large-sized units; (iii) there existed, during each period and in each industry sometimes one and sometimes more than one "typical" or "representative" size; (iv) there had been some degree of regularity in the distribution of sizes around the typical or representative units; and (v) there existed in each industry and during different periods, units of widely varying sizes, types and magnitudes.

Professor Mehta had also traced the relation between size and rate of profit, and size and cost of production for these seven industries. He found that the rate of return increased somewhat progressively with the increase in the size of industrial units in all of the seven industries during 1938-1947, and for jute, sugar, coal, cement and paper industries there was a significant correlation between the rate of return and size. For the relationship between size and the cost of production, he found some degree of negative correlation

between these two variables for the year 1948 (for cotton textile industry the reference year was 1938-39).

But the major thrust of Professor Mehta's study was the discussion of locational dynamics of industries and not the nature of concentration by big firms in Indian industries and its ramifications. Again, his measurement of size was not uniform and varied from industry to industry. For example, in the cotton textile industry it was the number of spindles installed, in jute the number of looms installed, in sugar the cane crushing capacity in tonnage, and in the rest of the industries it was output in tons. Thus it is difficult to compare the inter-industry size-structure in an uniform basis. Moreover, his conclusion that the institution of the Managing Agency System and interlocking directorships had evolved a type of industrial organization in which the individual units could, without surrendering their legal and functional independence, secure some of the economies of horizontal and vertical integration, was made without any critical examination. They contradict others' findings on the Managing Agency System, particularly those of Professor Lokanathan[25] whose study just preceded Professor Mehta's. Furthermore, Professor Mehta's study of the relationship between size of firm and the rate of profit was for the years 1938-1947--a very abnormal period for India when the economy was directly affected by the Second World War, and the policy was of using the promise of high

profits to induce big firms to expand.

Professor R.K. Hazari, in a series of articles in the late fifties[26] and also in his 1966 book entitled The Structure of the Corporate Private Sector[27] attempted to examine the size-structure of leading Indian industries along with the role played by large industrial houses. The reference period of his study was 1951-1958. By size he took the physical assets, i.e., the sum of fixed assets, net or gross of accumulated depreciation, and commodity inventory. He was mainly interested in the percentage changes in share capital and physical assets of twenty largest industrial groups over 1951-1958. The whole study was actually a detailed analysis of the holdings of these largest twenty industrial houses.

Since Professor Hazari was mainly concerned with the largest twenty houses his study does not examine the industry-wide concentration by big firms. Secondly, he used industry in the broad sense and nowhere explained how he defined the industries. His industries include such narrowly-defined industries as power, and also such heterogeneous groupings called "engineering". Thirdly, his definition of size as composed of physical assets does not take into account the impact of technological changes or the "vintage effect," to quote Professor Solow.[28] Finally, although the twenty largest industrial houses increased their shares during 1951-1958, as

shown by Professor Hazari, we do not know what their percentage shares were in respective industries which would be the most relevant indicator of 'concentration of economic power'.

Professor Joe Bain had also discussed the concentration problem in selected Indian industries in his volume on international structure relating to eight countries in the fifties.[29] He found substantially higher concentration in Indian industries than in the United States, United Kingdom, or Japan, somewhat higher concentration than in France and Italy, and not too great a difference from Canada in the matter of seller concentration. In seven of the sixteen Indian industries sampled, 100 per cent of the industry was controlled by one or two firms. Bain also pointed out the important role played by the Government sector in its licensing policies and in its response to the holdings of the managing agencies.

But the sample of industries Professor Bain examined was uneven and left out most important manufacturing industries like cotton textile, jute textile, and sugar, among others. One gets the feeling that Bain had assembled bits and pieces culled from U.S. Foreign Service Dispatches--his main source of information in compiling the relevant table (Table 4-7 in his book). Again, his comment that managing agencies are not an important source of concentration because they are so many can be challenged on the ground that it is the large

managing agents controlled by big industrial houses which dominate the industries. For example, it was found in 1956 that the largest managing agents in cotton, jute and sugar industries controlled 16.3, 28.2 and 20.7 per cent of total assets respectively.[30] Moreover, Professor Bain had very much overstated the role of imports in manufacturing. After the First Five Year Plan was launched in 1951, there had been considerable efforts to cut down imports, particularly after 1956, when the program of import substitution had significantly lessened this dependence since then.

Since the phenomenon of Managing Agency System was unique to India it was a subject of considerable discussion in Indian economic literature. Professor P.S. Lokanathan's thesis was an early attempt to analyze it scientifically.[31] He was the first to point out that a form of organization was evolved which, while formally joint-stock, was in reality largely proprietary in character. But his book was dated as it was written in 1935, and his discussion was mainly confined to the Managing Agency System as the source of industrial finance. While Professor Lokanathan did discuss in detail the evolution of the Managing Agency System and the role played by it in profitability and management of firms, his main interest was to determine the optimum size of the firm in an industry in the Marshallian-Pigovian sense and to relate it

with economic efficiency--efficiency being measured by the rate of profit. He did not define industry at all nor was his definition of size uniform.

Dr. Raj K. Nigam's study was the first attempt to gather comprehensive data about the firms managed by various managing agencies.[32] It is a fact book where the data had been compiled from the company records maintained by the Company Law Administration of the Government of India. Among the basic facts included in this study were the statewise distribution of the managing agencies and their managed companies, the frequency distribution of the managing agencies according to the number of companies managed by them, the industrial interests of top managing agencies, and others. Since the statistical data in this study were covered for one year only, namely 1954-1955, the data were not useful for any kind of study pertaining to inter-temporal changes in managing agency firms. The study made no attempt to analyze the data.

The study on the Managing Agency System published in 1959 by the National Council of Applied Economic Research in New Delhi under the guidance of Dr. P.S. Lokanathan developed information regarding the functions of the system in promoting financing and managing industrial concerns.[33] The conclusions reached by the Council are several. First, it has been found that if the promotional activities of managing agents are

assessed only from the data on the choice of form of management by new companies at the time of their registration, the role of managing agents does not appear to be conspicuous. However, some of the new companies floated outside the Managing Agency System in recent years owe their promotion to the well-known agency houses. In their cases the managing agents prefer to keep the new enterprises under the exclusive management of the Board of Directors, on which their interests were fully represented, most of the directors having been selected by the managing agents. Second, the effects of the Managing Agency System are evident from the activities of managing agents in expanding companies already established by them and branching out to new areas like automobiles, industrial machineries and chemicals. Third, the Council found that the managing agents contribute a substantial part of the share capital of companies under their management, excepting in the case of very large ones. In attracting finance through new issues in the capital market, the managing agents play an important role. Also, the part of managing agents in extending direct loans to middle-sized companies appears to be significant. Fourth, as regards the managerial functions no definite conclusions can be established as to whether the performance of companies under the Managing Agency System is superior or inferior; there does seem to be a slight edge in

favor of the managing agents. Finally, the 10 per cent remuneration of the net profits to be obtained by the managing agent seems excessive where a sliding scale would be better. The Council concludes by stating that the Managing Agency System still has a useful role to play in the economic development of the country. There is no evidence yet that the System cannot be improved and adapted from time to time to meet the changing economic situation.

But the Council Report played down the serious drawbacks of the Managing Agency System and focused more on the historical merits of the System, however antiquated they may be in an economy under the process of planned economic development. The Council did not discuss the serious consequences of concentration of economic power held by the managing agents and ignores the problem by pointing out that the type of concentration revealed in industries where the managing agents are predominant exists in other countries also, and so it is not a peculiar feature of the Managing Agency System. It concluded: "This is why the need for specific anti-monopoly legislation has not been felt in this country".[34] This view notwithstanding, five years later the Government was forced by a strong public clamor to appoint a Monopolies Inquiry Commission, and act on the recommendations of the Commission thereafter.[35] Apart from the problem of economic concentration,

the role played by the managing agents has been questioned as it relates to the evolution of decision-making by professional management or what Professor Galbraith calls "techno-structure".[36] Professor R.K. Hazari has charged that by discouraging participation by common people it is seriously hampering the growth of the stock market and the entire structure of enterprise. In the words of Hazari, the Managing Agency System is an expensive, irrational and part-time system of management.[37]

The brief survey of existing studies made on concentration in Indian industries makes it quite clear that much research remains to be done. Our study will attempt to fill some important gaps. Since we are taking the two decades (1948-1968) after India's independence as our reference period, it hopes to be more comprehensive and up-to-date. As we focus on the structure and performance of particular industries, it will provide a basis for comparative studies with other countries. The changing role of managing agency firms and large industrial houses will be examined as between industries and over time. Finally, it will shed light on the nature of relationship between growth and concentration of industries and try to explain the changes in the degree of concentration with the help of changes in growth rates and entry of new firms.

NOTES

[1]The debate flared up in 1959 when the Draft Outline of the Third Five Year Plan was presented in the India Parliament (Lok Sabha Debates, 11th Session, Vol. 45); that the bogey of economic concentration is a recurrent theme in Indian politics can be seen in a recent statement of Mr. S. Madhavan, the Industries Minister of Tamil Nadu State (Eastern Economist, Jan. 23, 1970).

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[3]Barbara Ward, India and the West (London, 1965).

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[7]Report of the Committee under the Chairmanship of Dr. I. G. Patel to the Government of India and the ensuing legislation.

[8]R. S. Rungta, The Rise of Business Corporations in India, 1851-1900 (London, 1970).

[9]Government of India, Report of the Monopolies Inquiry Commission, Vol. I, p. 3.

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[11]P. S. Lokanathan, op. cit., Ch. 1.

[12]Government of India, Report of the Monopolies Inquiry Commission, Vol. I, p. 6.

[13]J. S. Bain, Industrial Organization (New York, 1959).

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[17]Government of India, The Indian Companies Act of 1956 (New Delhi, 1956).

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[22]Alak Ghosh, Indian Economy: Its Nature and Problems, 9th ed., Ch. 18 (Calcutta, 1965).

[23]"Managing Agents in New Garb," Economic and Political Weekly, Editorial Comment, April 6, 1968, p. 551.

[24]M. M. Mehta, Structure of Indian Industries (Bombay, 1955).

[25]P. S. Lokanathan, Industrial Organization in India (London, 1935).

[26]R. K. Hazari, "Ownership and Control," Economic Weekly, Nov. 26, Dec. 3 and Dec. 10, 1960.

[27]R. K. Hazari, The Structure of Corporate Private Sector (Bombay, 1966).

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[29]Joe S. Bain, International Differences in Industrial Structure (New Haven, 1966).

[30]National Council of Applied Economic Research, The Managing Agency System (New Delhi, 1959).

[31]P. S. Lokanathan, op. cit., pp. 3-28.

[32]Raj K. Nigam, Managing Agencies in India (New Delhi, 1957.

[33]National Council of Applied Economic Research, op. cit., pp. 1-59.

[34]National Council of Applied Economic Research, op. cit., p. xiii.

[35]The Government of India appointed the Monopolies Inquiry Commission in April, 1964, "to inquire into the existence and effect of concentration of economic power in private hands" (The Report, p. 1).

[36]J. K. Galbraith, The New Industrial State (Boston, 1967).

[37]R. K. Hazari, "The Managing Agency System: A Case for its Abolition," Economic Weekly, Annual Number, Feb., 1964.

CHAPTER II

GENERAL OUTLINE AND DATA SOURCE

While considerable development has taken place during the last two decades in the literature on industrial organization with respect to both techniques of analysis and the collection of data, Indian works on the subject have largely overlooked these developments. The present study will develop the widely accepted measures of concentration and analyze the nature of size-distribution of firms. Also, for the first time we will be able to examine the changes of concentration in important Indian industries for the entire two decades since India's independence in August, 1947.

The Purpose

This study seeks to achieve four things:

i) To measure both absolute and relative degrees of concentration in 22 major Indian industries and show their changes during the two decades from 1948 to 1968; we will try to explain the reasons behind the changes in concentration ratios by testing relevant hypotheses;

ii) To examine the differences in the industrial concentration between India on the one hand, and the U. S., U. K., Canada, and Japan, on the other. We will attempt to explain the differences by testing the hypothesis that industrial concentration varies inversely with the size of markets (domestic and/or foreign);

iii) To analyze the changing role of managing agencies in these 22 industries along with the economic concentration posed by large industrial houses. We will compare Indian houses with Japanese zaibatsus and U. S. conglomerates;

iv) To test the hypothesis that industrial concentration is inversely related to economic growth, i.e., as the size of industries increases, concentration in these industries will decline. This hypothesis will be tested with the data for the period 1948-1968.

Our study will also enable us to analyze the impact of economic planning on the level of concentration in important industries in India. As the period taken in our study covers the years when three Five Year Plans were launched and completed (1951-1966), the economic growth achieved might be expected to lead to a decline in concentration in the growing industries. We will also be able to discuss the importance of large industrial houses in these industries and changes of their percentage share during this period. This will bear directly to the question

whether economic concentration had increased during this period of planned economic development.

Analytical Framework

To measure the change of concentration in important Indian industries over time, we will employ indexes of both absolute and relative concentration. Calculation of largest four-firm and eight-firm concentration ratios for specific points of time will give us an estimate of changes in percentage share of industries held by a small number of firms at the top.[1] Changes in the index of relative concentration, on the other hand, will take the entire firm-size distribution and will measure the change in relative disparity of firm sizes. We will employ both the Gini coefficients[2] and the Herfindahl index (which is a mixed one)[3] for specific reference years in the time period covered by the study.

In order to explain the changes in industrial concentration we will test the hypothesis that concentration will decline with industrial growth. There is a rich body of theoretical literature to suggest that concentration is more likely to decline in growing industries and to rise in shrinking industries. There may be rapid entry into growing industries and dominant firms may encounter difficulties, as Professor Baumol has suggested.[4] There may be diseconomies of scale of the familiar static sort, and various dynamic factors and bottlenecks which

affect the firm's ability to grow.[5] Again, dominant firms in oligopolistic industries may adopt a long-run profit-maximizing strategy which involves their yielding up an increasing part of their market share, as pointed out by Professor Stigler.[6]

The empirical studies dealing with the U. S. data have found the negative correlation between concentration and growth, as suggested by theoretical literature. Professor Nelson has found "positive thought not conclusive support" for the hypothesis that declining concentration is associated with growth.[7] Professor Shepherd had reached a "quite definite" conclusion that growth variables were significantly (negatively) associated with changes in concentration for the period 1947-1958 in U. S. manufacturing industries.[8] The same conclusion was reached by Professor Kamerschen when the period was extended to cover 1947-1963.[9]

We might thus expect that the same kind of relationship between growth and concentration might also be true for India. In the regression analysis used, the percentage change in concentration ratios (both four-firm and eight-firm) will be the dependent variable, and percentage change in the assets of firms (the "growth" variable) will be the independent variable. We would expect a negative sign between these two variables. We would also expect a negative relationship between changes in concentration ratios and changes in the number of firms.

The reason for this supposition is that as new firms enter the industry, concentration by top four and eight firms would decline, as theory suggests.

Data Source and Limitations

A. The Main Source of Data Used. The problems of acquiring reliable data, particularly the time series data, are formidable in any underdeveloped country. India is no exception to that. As I. M. D. Little comments in regard to India, "It is extraordinary what little fuss the Planning Commission makes about the poverty of Indian statistics."[10] To quote Gunnar Myrdal from his Asian Drama: "Whether as a tool for planning or an indicator of results, the statistics are unreliable and inadequate."[11] The principal source of data to be used in this study is Kothari's Economic Guide and Investors' Handbook of India, published since 1945 (under various names like Investors' Encyclopaedia), which contain, among other things, data on paid-up capital, reserves, and other information for all joint stock companies (i.e. incorporated) as compulsorily registered with the Ministry of Industries, Government of India.[12] In content it resembles Moody's Industrial Manuals in the United States. This main source of data was supplemented by various stock exchange manuals like the Madras, Calcutta and Bombay Stock Exchange Year Books, in order to obtain necessary additional information for each company in the industries covered. (In

Appendix A we have given a specimen of the kind of data of a company we generally find in Kothari's Handbook).

The dependence of our study on Kothari's Handbook will not bias it unduly as the data are quite comprehensive and the coverage in most of the industries is more than 90 per cent. This is also not the first time that Kothari's Handbook is used for empirical investigation in India. Professor Andrew Brimmer in his 1955 study on the role of the Managing Agency System of India used Kothari's Handbook where 1,064 companies were classified under seventeen industries.[a] Professor Brimmer also noted that the publicly registered joint stock companies are responsible for the bulk of the output in these industries.[13] The National Council of Applied Economic Research in its study on the Managing Agency System compiled data from Kothari's Handbook and divided companies into "traditional" Indian industries like cotton, jute, sugar, paper, and cement.[14] Professor L. C. Gupta in his discussion on the ownership of stocks in Indian industries also used Kothari's Handbook.[15] It is thus apparent that many important studies on Indian industrial structure had relied on data collected by Kothari. This is mainly because Kothari's is the only source available in India where data on individual firms in the organized private sector are given.

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[a] Professor Brimmer included railways, tea, coffee and other plantation enterprises which are excluded from our study of manufacturing industries.

TABLE 2-1

NAMES OF 22 INDIAN INDUSTRIES WITH COMPARABLE U.S. SIC CODE

Names of Indian Industries	Comparable U.S. SIC Code
Cotton Textiles	2211,41,53-56
Woolen Textiles	2231,2283
Synthetic Textiles	2221
Jute Textiles	....
Paper	2611,2631
Cement	3241
Sugar	2062
Vegetable Oils	2091-93
Glass	3211-31
Rubber	3011-31
Tools & Instruments	3541-44,3811-41
Industrial Machineries	35
Automobiles & Ancillaries	3713-15,17,41-48,51
Electrical Engineering	36
Mechanical Engineering	34
Metallurgical Industry	33
Alkalies & Allied Chemicals	2812-13
Fertilizers	2844
Organic Chemicals	2818
Plastic Chemicals	2821
Dyes	2851
Drugs & Pharmaceuticals	2834

Source: U.S. Senate, Subcommittee on Antitrust and Monopoly, Concentration Ratios in Manufacturing Industry, 1963; and Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

B. Industries to be covered. The industries for which systematic time-series data on individual firms are available and which will be covered in our study are shown in Table 2-1, along with U. S. SIC codes. This comparison with U. S. data will indicate the nature of aggregation in our data. As seen in Table 2-1, 8 out of 21 industries (jute is excluded as it is

not on the U. S. list) have 4-digit industry classifications, 9 have 3-digit, and only 4 Indian industries have 2-digit SIC codes.

Although our coverage of industries are much broader in comparison to U. S. data, we have taken almost all the industries in the Indian Census of Manufactures (CMI) which had a total of 29 industries. Only those industries have been excluded which are characterized as agricultural processing or cottage production. Among these are rice milling, wheat flour milling, biscuit making, fruit processing, soap, matches and starch.[16] The Monopolies Inquiry Commission of India had produced data on concentration ratios of Indian products (3-firm) on the basis of physical production. Since this is for 1964 only, it does not give any opportunity to compare changes in the concentration ratios of these products over the years. Besides, they are so detailed that only one firm is recorded in most products. For example, in tools and instruments 81 products are listed, in industrial machineries 71, in automobile and ancillaries 102 products, with a grand total of 1002 products for our 12 engineering and chemical industries.[17] This is much too detailed classification even when compared to the United States where, in these two groups there were 176 4-digit industries in 1963. In Appendix B we have given the lists of products for selected industries like automobile and

TABLE 2-2

PERCENTAGE PRODUCTION OF MAJOR INDIAN INDUSTRIES (IN SALES), 1966

Industry	Per Cent of Production (in rupees)
Sugar	8.0
Cotton Textiles	26.5
Woolen Textiles	1.0
Jute Textiles	8.2
Chemicals	9.3
Electrical Engineering	9.0
General Engineering	9.3
Glass	0.8
Paper	2.7
Cement	2.3
Vegetable Oil	7.0
Total	84.1

Source: Statistical Abstract of India, 1968

ancillaries, alkalies and allied products, electrical engineering, and two other industries.

The industries we have taken for our study constitute over 80 per cent of the total manufacturing activity in India. In Table 2-2, we have shown the percentage of total production (in rupees) as provided by 20 out of our 22 industries in 1966. The study thus includes industries that account for a large percentage of industrial production in India. Only a fringe of unorganized agricultural processing industries are left out for which we do not have adequate data.

We have taken the joint-stock companies in our industry totals. This is mainly because balance sheets of joint-stock

companies are the only data on industries which are available to users of industrial studies. As mentioned above, all previous studies on Indian industries have used this data source, and this study had no other alternative but to use this only available source also. Professors Hazari, Mehta, Lokanathan, Nigam & Choudhuri, Bain and every other researcher had to use these data on joint-stock companies only.[18] Even the resourceful National Council of Applied Economic Research and the Industrial Licensing Policy Inquiry Commission had no other alternative but to use this source.[19] Reliance on Kothari does not inhibit our study seriously. Of the 22 industries we have selected, all fall in the organized sector where floating of firm as joint-stock company has been the usual practice and, as mentioned before, these industries constitute about 84 per cent of total manufacturing activities in India. The percentage of output in these industries that is accounted for by the joint-stock companies is typically also very high. Unfortunately, we do not possess statistics on the coverage by joint stock companies in all our 22 industries. But we may note that for the "traditional" Indian industries, the coverage by joint stock companies in cotton textiles, jute textiles, sugar, paper and cement was 83 per cent, 85 per cent, 92 per cent, 80 per cent and 90 per cent respectively during 1963-1964.[20] In engineering and chemical industries, the percentage of firms

outside joint stock companies was quite low, as pointed out by the Industrial Licensing Policy Inquiry Commission.[21]

As regards conglomerate firms in India, the nature of the problem is quite different from other countries. Here one company is not engaged in different manufacturing and non-manufacturing activities as are companies like ITT and LTV in the United States. Rather, one company is engaged in one industry only but is controlled by a managing agency which manages more than one company in an industry or in a number of industries. Under these managing agencies growth takes the form of the establishment of separate new joint stock companies or the expansion of existing companies.

In India it is the managing agency which is conglomerate in character, owning the controlling shares of different firms in different businesses. Since the managing agencies are generally not incorporated, the firms under their controls are mostly single-industry firms. Thus the large managing agents like Tatas control 72 firms in different manufacturing and non-manufacturing businesses, Birlas 82 firms, and Bangur 45 firms, where mostly the firms with each separate board of directors are engaged in one industry only.[22]

C. Problems relating to census data. For the kind of study we are pursuing here, census data on Indian manufacturing

industries are of limited use to us. The data are in aggregative terms, furnishing the usual information on the number of factories, average number of days worked, capital employed, rent paid, number of persons employed, salaries, wages and benefits, value added, depreciation and ex-factory value of output--geographically classified by 16 States, by size of employment (till 1958) and by type of organization. Our main data objective is to get information about individual companies that constitute these industries. The census authorities on the other hand, must be silent and can not divulge data on individual firms or establishments. Again, we have taken the individual company as the decision-making unit. We have no way of checking our industry totals with the totals given by census data as the latter are in terms of plants or establishments, while our source is balance sheets of companies which contain more than one establishment in many cases. The census furnishes data on the total number of factories (or establishments) in an industry. Thus if a company has three factories in the jute textiles industry, the number of establishments will be three, while actually there is only one firm, i.e., one board of directors.

The census data would have been more valuable to our study if the classification by size of employment had been continued beyond 1958. But this classification was given

only for 1953-1958, and has been discontinued since 1958. Thus for our time series study of concentration, the census data render little meaningful direct assistance.

D. Measurement of size. The size of a firm is measured here in terms of "net assets" or "capital assets" (i.e., paid up capital plus general reserves), and are the basis for the measures of concentration. Its use is justified by its being the only available measure, and probably not the least usable of the several measures of size. Among its limitations, as Adelman pointed out, are difficulties in using assets as a measure during periods of appreciable price changes.[23] However, all other measures possess limitations of greater or lesser degree. Moreover, some comfort can be drawn from the fact that the several measures show very high correlations among themselves, as Rosenbluth has demonstrated.[24] Since we are mainly concerned with the relative change in firm size, any general change in price level will not affect the relative position of firms unduly.

In almost all Indian industrial studies, the size has been measured by paid-up capital only, as Dr. Nigam and others have done. But the figures of "paid-up capital" do not afford a satisfactory basis of measurement. The methods of financing the industry may be different in different centers of the country, and even within the same center, between different

units. In centers where industrial capital is cheap and easily available, firms will prefer to borrow more than where it is scarce, irregular in availability and difficult to obtain. Again, some firms prefer, as a matter of business policy, to depend more on owned capital and less on borrowed capital.

To take paid-up capital alone as the measure of size thus would be highly unsatisfactory. Professor Hazari has taken the book value of physical assets as the measurement of size.[25] But this measure underestimates the changes in productivity. Besides, as Dr. Lokanathan has pointed out, the methods of valuation of the capital invested in buildings, equipment and other materials are so various that the figures are of limited comparability among firms and industries.[26]

We believe that by taking "net assets" we will avoid the pitfalls of taking paid-up capital alone, or physical assets, as Professor Hazari has done. Taking both paid-up capital and reserves as net assets or capital assets give up a better yardstick of a firm's net worth; besides, since we are dealing with time series analysis, this is the only series of data we can obtain for the entire two decades of our study. Inspection of the data reveals that in India paid-up capital generally changed very little from year to year. For a few years at a stretch, the paid-up capital does not change; then with the increase in authorized capital and new financing the

paid-up capital, of course, will increase. But we have to choose a variable which changes with the economic condition of the firm. Paid-up capital plus reserves thus constitute the most meaningful available measure which reflects changes the firm is undergoing. Our position may be summed up best by the words of Professors Collins and Preston: "....assets have been used in most of this kind because of their availability, and because of their significance as an index of ability to engage in economic activity."[29]

Paid-up capital and reserves are the only items available throughout the period of our study. We have used this variable before in a study on the size structure of Indian engineering industries with satisfactory results.[28] Time series data on sales or employment for individual firms during the period 1948-1968 are not available to us. Most studies in India as in Japan have used paid-up capital only. As recently as 1970, Dr. Elenor Hadley in her study on the Japanese monopoly problem used this measure.[27] But taking paid-up capital alone is highly unsatisfactory. Paid-up capital and reserves will be a better measure of size which can be taken as "net asset" or "capital asset".

Role of Price Change, Exports and Import Substitution

A. Changes in price level. India enjoyed a remarkable degree of price stability during most of the years of our study. Up

TABLE 2-3

INDEX NUMBER OF WHOLESALE PRICES[a] IN MAJOR COMMODITIES IN INDIA, 1955-66 (1952-53=100)

Year	Agricultural Commodities	Foodgrains	Total Manufacturing	All Commodities
1955-56	88	73	100	92.5
1956-57	104	94	106	105.3
1957-58	107	98	108	108.4
1958-59	114	106	108	112.9
1959-60	116	102	112	117.1
1960-61	124	102	124	125.9
1961-62	123	100	127	125.1
1962-63	123	106	129	127.9
1963-64	132	116	131	135.3
1964-65	156	144	137	152.7
1965-66	169	150	149	165.1

[a]Average of weeks.

Source: Economic Survey, Government of India, 1967-68, p. A-42.

until 1963-1964 the rate of growth of prices, on the average, was not more than 2 per cent per annum. As shown in Table 2-3, the index number of wholesale prices stood at 127.9 in 1963-1964, with the base year 1952-1953. The index for manufacturing production rose almost at the same rate during this period.

But this price stability was marred by a sharp price increase of nearly 12 per cent per annum in the three years ending 1963-1964 to 1966-1967.[30] This was mainly due to the occurrence of serious droughts in two successive years (1963 to 1967) causing a severe drop in agricultural production. The border clash with China in late 1962 also forced the increase

in defense spending, financed mainly through deficit budgets.[b] Since our period (1948-1968) covers most of the years which the price level was quite stable, the sharp rise in prices at the end of the period should not affect our data unduly. Moreover, as will be shown in Chapter III, the main structural change in Indian industries occurred during 1958-1963, a period marked by a remarkable stability of price. Little structural change of industries took place during 1963-1968, when the price level rose sharply and the economy suffered a recession for two years (1966-1968).

B. Exports. The industries I have taken constitute the bulk of India's export in manufacturing products, and also account for the major manufacturing activities in domestic production, providing the largest percentage in employment and income in the industrial sector of the economy. These industries accounted for 40.1 per cent of total exports in 1966, the rest being in agricultural commodities and mineral raw materials.[31] As an underdeveloped country India manifests one of the principal characteristics of this under-development, namely, the dependence on agricultural and mineral products for export.

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[b]For a rather detailed discussion of the economic conditions of India under three Five Year Plans, see Section I of Chapter VI.

Regarding the trend of exports, India experienced a boom in her exports during the Korean War, mainly in jute. After the collapse of this boom, India's export remained stagnant throughout the period of 1951-1961.[32] This was mainly due to the stagnant world demand for agricultural and mineral products, as Dr. S. J. Patel had pointed out.[33] Also, the Second Five Year Plan, being influenced heavily by Soviet thinking on economic planning, emphasized a closed economy involving retardation of export earnings through inelasticity of export demand. During the first three years of the Third Five Year Plan (1961-1964), exports had increased somewhat but they fell off again with the adverse conditions of the country resulting in the 1966-1968 economic recession. Only in 1971 did the Indian exports increase significantly, engineering products being the third major item, after jute and tea.[34]

C. Import Substitution. Imports have an important role to play in our discussion on concentration, as increase in imports generally tend to decrease domestic concentration through the expansion of markets and the resultant decrease in market share by the home producers. The opposite would be true in the case where imports are restricted from coming to the markets of a country. In India from the very beginning of her freedom in 1947, imports were restricted, first by the imposition of

restrictions in granting foreign exchange, and second, by the physical curtailment of imports through quota systems.

When the Second Five Year Plan was launched in 1956, India faced a serious foreign exchange crisis. This was due mainly to the depletion of her sterling balance with the British Government. This, along with the planned policy of increasing indigenous manufacturing production and simultaneously becoming self-sufficient quickly through import substitution, resulted in the cutting of virtually all imports to India. Principal exceptions were defense materials and supplies of essential parts for manufacturing not produced then in India. This policy of import substitution was carried out vigorously throughout the planning years of 1956-1966, and was abated only recently.

Professor Harry Johnson,[35] Ronald McKinnon,[36] J. Pincus[37] and others have pointed out that a policy of import substitution as pursued by many underdeveloped countries to induce faster industrialization would also serve to increase industrial concentration in these countries. As indigenous entrepreneurial talents and capital are in short supply, the sheltering of the economy from foreign competition would provide relatively more opportunities for large producers than for small producers to expand, and this would result in increasing concentration. This we consider to be one of the reasons for the prevailing

high degree of concentration in Indian industries. To quote Professor Bhagwati and Desai on this point:

> Thus, all forms of effective competition, potential and actual, were virtually eliminated from the industrial system. The effects, therefore, were (1) to eliminate incentives to reduce costs per unit output (as the penalty for sloppy operations was no longer incapacity to survive against more efficient rivals), and (2) to prevent production from being concentrated in the most efficient units (and industries).[38]

Some Uncovered Areas

A. Government (or public) sector. Since the beginning of India's political freedom in 1947, the Government of India was determined to play a larger role in India's economic destiny. The Industrial Policy Resolution of 1948 visualized a "mixed" economy for India where the industrial activities were divided into public (i.e., government) and private sectors. Capital goods industries such as shipbuilding, iron and steel, atomic energy and railways were reserved for the public sector. The private sector, on the other hand, covers all consumer goods industries such as textiles (all kinds), cement, paper, sugar, rubber, vegetable oil, engineering and chemical goods. The industries we have covered in this study thus fall in the private sector categories where the role of the Government sector is minimal.

It is worth noting that despite a large increase in the public sector outlay during the three Five Year Plans, about

TABLE 2-4

SHARE OF GOVERNMENT IN GROSS NATIONAL EXPENDITURE AND GROSS CAPITAL FORMATION IN FIVE COUNTRIES, 1964

Countries	Government's Share	
	Gross National Expenditure (%)	Gross Capital Formation (%)
U.S.A.	21.4	2.9
U.K.	24.6	7.9
Sweden	27.9	9.5
Japan	20.7	11.1
India	17.0	10.0

Source: Honorable Mr. Manubhai Shah (Minister of International Trade, Government of India), "The Role of Private Sector," Eastern Economist, July 21, 1967, p. 111.

90 per cent of India's economy is still in the private sector.[39] The share of the Government in gross national expenditure and in gross fixed investment does not work out at more than 17 per cent and 10 per cent respectively. In Table 2-4, we have given the comparative figures for some of the advanced countries for the year 1964. Thus we find that, as of 1964, the share of the Government in India in gross national expenditure was low in comparison to such free-enterprise economies as the U. S. A. or Japan. In gross capital formation it is close to Sweden and Japan where the role of the Governments in capital formation are much higher than that of the United States.

B. Small and cottage-type firms. Since our data are compiled from the financial reports of joint-stock companies, we could not include small or partnership firms in our twenty-two industries, nor firms engaged in cottage-type production which are quite prevalent in India. It was reported as of 1964 that there were about 57,000 small-scale units registered with various State Directorates of Industries in India. The number of non-registered small-scale factories as estimated by the Central Small Scale Industries Organization was between 200,000 and 250,000 in 1964.[40] In almost all countries the number of these small firms are quite large. In the United States, for example, there were 216,339 firms employing less than 100 persons in 1963-1964. For the U. K., 73 per cent of all manufacturing firms employed less than 100 persons for the same period.[41]

In spite of the prevalence of small firms in the Indian economy, systematic time-series data relating to them are not available and no study on Indian industries has been able to include them so far. Professors Bain, Hazari, Lokanathan, Nigam, and the National Council of Applied Economic Research could not find adequate data on small and cottage-type firms to include them in their studies on concentration in Indian industries.[42] However, the absence of data on small and cottage-type firms does not seriously inhibit our study. First, most of the industries covered are in the organized sectors where

the joint-stock companies are the predominant form of organization. Second, the industries where small firms prevail are mainly agricultural-based industries such as rice milling, wheat flour milling, biscuit making, fruit processing, soap, tanning, ceramics, plywoods, matches, and starch. Among the cottage industries the most important items are handlooms, production of raw silk, spinning and weaving out of coconut fibers, and handicrafts. All these are excluded from our twenty-two industries. Among the industries covered, only in cotton textiles are the small and cottage-type firms important. Here, about 80 per cent of the production comes from joint-stock companies that are included in our study.

The problem of not being able to include small firms in the measurement of concentration ratios besets studies for almost all the countries where they are attempted. For example, Professor Rosenbluth in his 1970 study on the Canadian concentration ratios obtained data under the Corporations and Labor Unions Returns Act (CALURA) where unincorporated firms are excluded, as well as small companies where gross revenues during the year 1963 was less than $500,000, or whose assets were less than $250,000.[43] In the U. K., the study done by Evely and Little also excluded small firms. When they included small firms in some trades to see the difference they would make in the relevant concentration ratios, they found that

for 60 of the 147 trades, "their inclusion made no difference to the employment concentration-ratio, and in another forty-six Trades only a 1 percentage point reduction resulted."[44]

We thus believe that, in spite of the limitations mentioned above, the data we have assembled are fairly homogeneous and the coverage quite extensive. They have been used before in India as the only available source for the kind of study we are undertaking. We believe that the analyses brought forth and the trends depicted in this study would be truly representative of the structural changes undergone by major Indian industries during 1948-1968. As we have attempted to undertake a time-series analysis of concentration ratios for the first time in India, our study would bring out, among others, a common basis for the international comparison of industrial concentration.

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CHAPTER III

CHANGES OF CONCENTRATION IN INDIAN INDUSTRIES, 1948-1968

Our main purpose is to examine the changes in the degree of concentration in major manufacturing industries during the past two decades since the attainment of India's national independence in August, 1947. This span of twenty years (1948-1968), when probed, would throw new light on the heated controversy whether concentration in 22 major industries has increased since independence and the launching of three consecutive Five Year Plans.[1] The debate is set against a background where most of the Indian industries had been characterized by a high degree of economic concentration. Professor Joe Bain in his study on Indian industries had found that during 1960-1961, in 7 of the 16 industries sampled, 100 per cent of the industry was controlled by 4 or fewer firms, and in 4 of these 7 cases, all of the industry was controlled by one or two firms.[2] The Monopolies Inquiry Commission had listed 100 products for 1964 and out of those 100, 65 products had 3-firm concentration ratios over 75 per cent, and 83 products had 3-firm ratios over 50 per cent, based on the value of production.[3]

As discussed in Chapter I, the historical roots of the industries, nursed by early protection and the Managing Agency System, gave rise to the situation of market occupancy by a few giant firms mostly controlled by well-known industrial houses.

Changes in Concentration Ratios, 1948-1968

The basic measure of concentration used in this study is the asset share of the largest 4 firms and 8 firms in an industry. These ratios measure the extent to which a small number of firms account for a small, medium or large proportion of an industry's total assets. Since we are mainly interested in the changes of industrial concentration over the span of twenty years, these concentration ratios at specified reference years will provide a fairly good description of the structural changes of the industries concerned.

In Table 3-1, we have computed the 4-firm concentration ratios for 1948, 1953, 1958, 1963 and 1968. The Table shows, first, that in most of the industries the level of concentration has been persistently high over the period. In 1948, 17 out of 22 industries covered had 4-firm concentration ratios over 50 per cent, and of these 12 had 4-firm ratios over 70 per cent. In 1953 as well as in 1958 the number of industries with 4-firm concentration ratios over 50 per cent remained at 17. The number of industries with 4-firm ratios over 70 per

TABLE 3-1

CHANGES IN 4-FIRM CONCENTRATION RATIOS
IN 22 INDIAN INDUSTRIES, 1948-1968

Name of Industry	4-Firm Concentration Ratios				
	1948	1953	1958	1963	1968
Cotton Textile	13.15	11.98	12.33	13.65	14.71
Woolen Textile	81.45	81.02	80.72	75.86	75.13
Synthetic Textile	86.74	86.03	75.90	73.57	72.38
Jute Textile	13.90	14.36	17.89	26.24	28.74
Paper	63.43	57.19	59.69	50.52	38.32
Cement	70.10	68.62	66.93	66.08	60.37
Sugar	20.98	20.53	18.48	17.59	17.62
Vegetable Oil	54.83	48.11	51.03	65.77	64.36
Glass	68.70	70.45	74.92	70.72	63.78
Rubber	88.99	93.23	87.79	76.38	79.16
Tools & Instruments	77.99	72.06	62.88	49.91	41.96
Industrial Machineries	66.49	64.42	58.11	40.95	43.98
Automobile & Ancillaries	84.22	80.72	70.74	57.62	57.24
Electrical Engineering	43.75	55.51	48.66	40.48	32.52
Mechanical Engineering	36.49	32.53	31.85	30.56	29.01
Metallurgical Industry	81.64	84.07	80.53	76.43	78.09
Alkalies & Allied Chem.	71.32	70.55	62.72	42.28	45.63
Fertilizers	99.32	95.91	85.65	82.16	90.37
Organic Chemicals	100.00	100.00	93.52	78.38	76.53
Plastic Chemicals	100.00	100.00	87.57	64.90	57.82
Dyes	100.00	100.00	95.36	91.83	89.04
Drugs & Pharmaceuticals	53.33	53.92	55.28	56.38	55.21

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

cent remained at 12 in 1953 but declined to 10 by 1958. By 1963, the number of industries with 4-firm concentration ratios over 50 per cent had decreased to 14, and the number stood at 13 for 1968.

Second, the predominant pattern of 4-firm concentration change over the period was one of decline. As Table 3-1 indicates, 18 industries had lower concentration in 1968 as compared to 1948; only 4 industries had shown increases during the same period. The declines in concentration ratios were significant (over 5 percentage points) in 16 industries while the increases were significant only in 2 industries. In like manner the decline by 1968 of the number of industries that had 4-firm concentration ratios over 70 per cent in 1948 was also significant. It fell to 8 industries in 1963 and 7 in 1968 from a total of 12 industries in both 1948 and 1953.

Third, the few industries showing a 1948 to 1968 increase in 4-firm concentration were mostly in the traditional sector of the economy, a sector long established and functioning as the chief export-earners. The increase in concentration ratios had been highest in jute textile industry (14.84 per cent) where there had been no increase in the number of firms during the period and the growth of asset size had been minimal. There had been considerable growth, both in number of firms and asset size in the cotton textile and the drugs and pharmaceuticals industries, but here the increase in concentration

ratios from 1948 to 1968 had been relatively small, being 1.56 and 1.88 per cent respectively.

Fourth, the decline in concentration ratios had been highest in the fastest growing industries in India, both in terms of number of firms and size of assets. All the industries in the engineering group and the chemical group (except drugs and pharmaceuticals) showed significant declines in concentration. So also did woolen and synthetic textiles, paper, cement, glass, and rubber. In each of these the 1948-1968 decrease in concentration ratios had been more than 5 percentage points. In 6 industries the decreasing trend of concentration continued persistently from 1948-1968.

Finally, the principal decrease in 4-firm concentration in almost all industries took place during the middle ten years (1953-1963) of the two decade period. Between 1948 and 1953, concentration ratios changed little in 19 out of 22 industries. They declined by slightly more than 5 percentage points in paper, and tools and instruments industries. This was the period when the Indian economy experienced maximum growth. Similarly, for the period 1963-1968, the majority of the industries showed insignificant changes. Only in 7 out of 22 industries did the change in concentration ratios exceed 5 percentage points.

In Table 3-2, we have computed the 8-firm concentration ratios of the 22 Indian industries during 1948-1968. The

TABLE 3-2

CHANGES IN 8-FIRM CONCENTRATION RATIOS
IN 22 INDIAN INDUSTRIES, 1948-1968

Name of Industry	8-Firm Concentration Ratios				
	1948	1953	1958	1963	1968
Cotton Textile	21.98	20.72	21.03	23.34	24.82
Woolen Textile	95.07	93.17	93.97	94.06	95.11
Synthetic Textile	100.00	100.00	99.57	98.56	98.88
Jute Textile	25.12	26.18	28.96	36.77	39.72
Paper	86.16	81.32	80.31	67.82	62.47
Cement	86.22	83.59	80.93	81.74	77.27
Sugar	30.14	33.33	23.66	25.57	26.08
Vegetable Oil	71.36	62.67	65.37	81.99	80.54
Glass	89.64	90.68	91.29	91.72	90.83
Rubber	100.00	99.04	97.21	95.30	95.18
Tools & Instruments	93.95	82.76	75.97	67.05	63.09
Industrial Machineries	85.67	88.00	86.94	67.02	68.68
Automobile & Ancillaries	93.02	91.57	87.56	74.10	73.68
Electrical Engineering	62.30	69.41	67.90	62.37	48.39
Mechanical Engineering	55.41	50.62	49.67	44.79	43.40
Metallurgical Industry	91.10	90.56	86.26	85.81	84.09
Alkalies & Allied Chem.	91.30	90.65	84.07	67.29	69.10
Fertilizers	100.00	100.00	98.74	93.27	95.72
Organic Chemicals	100.00	100.00	97.52	92.72	88.98
Plastic Chemicals	100.00	100.00	87.57	89.04	85.74
Dyes	100.00	100.00	88.36	99.31	99.24
Drugs & Pharmaceuticals	74.28	73.80	72.49	74.26	75.85

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

measurement of 8 firm concentration ratios indicates the dispersal of big firms at the top--the degree of change from 4-firm concentration. As we see in this Table, the same trend of high concentration as found in Table 3-1, prevailed during these two decades. There were 19 industries in 1948 with 8-firm concentration ratios of 50 per cent and over, and the number dropped to 17 industries in 1968. But in the 8-firm concentration range of 70 per cent and higher, there were 17 industries in 1948 while in 1968 the number stood at 13.

The 8-firm concentration ratios decreased in 15 industries, increased in 3, and remained virtually constant in 4 during 1948-1968. The decrease in 8-firm concentration ratios were significant (over 5 percentage points) in 12 industries, the 12 showing an average decline of 15 percentage points from 1948 to 1968. The increase was significant in 2 industries with an average increase of 11.69 per cent during 1948-1968. The 8-firm concentration ratios fell consistently from 1948 to 1968 in 6 industries and rose consistently during the same period for one industry only, namely jute textile. In 6 industries the ratios remained constant during 1948-1953, and fell off slightly during 1953-1968, thus scoring insignificant change for the entire period. Again, the industries where 8-firm concentration ratios increased during 1948-1968 were traditional and slow growing, while the industries where the

ratios decreased in the same period were fast growing and newly developed following India's independence.

In Tables 3-1 and 3-2 we have discussed the change in 4-firm concentration ratios taking each firm as a separate decision-making unit. But in India one managing agent in many cases controls more than one firm in an industry. When we take this multi-firm holding by managing agents as the unit along with firms not controlled by them, and measure the share of 4 and 8 largest single or multi-firm units in an industry, the degree of concentration would be higher in industries where this phenomenon exists. In Table 3-3, we have shown the change in the 4 largest single or multi-firm concentration ratios during 1948-1968. When compared with Table 3-1, the differences in the levels of concentration are more than 5 percentage points in 6 industries and 10 points more in 2 industries. But the decreasing trend which we have witnessed in Table 3-1 is also present here. In 13 out of 17 industries (in 5 industries there was no multi-firm holding), the concentration ratios declined from 1948 to 1968. Only in jute and vegetable oil did the ratios increase, and in cotton textile it remained constant. Again, in all the engineering and chemical industries (except metallurgical) the ratios declined by more than 20 percentage points. In the chemical group, 3 out of 6 industries had no multi-firm holding for the entire period covered, and the

TABLE 3-3

SHARE OF 4 LARGEST SINGLE OR MULTI-UNIT FIRMS IN 22 INDIAN INDUSTRIES, 1948-1968

Name of Industry	4 Single or Multi-Firm Concentration Ratios				
	1948	1953	1958	1963	1968
Cotton Textiles	20.63	22.05	27.43	28.28	29.11
Woolen Textiles	85.39	84.36	84.36	81.17	80.42
Synthetic Textiles	98.56	98.19	92.56	94.50	94.08
Jute Textiles	35.98	33.88	36.18	40.64	46.72
Paper	73.88	70.37	74.50	54.85	59.16
Cement	79.09	83.59	79.11	77.02	71.59
Sugar	27.03	28.96	20.87	22.51	23.54
Vegetable Oil	64.42	61.28	57.40	69.37	69.20
Glass	69.70*	70.45*	74.22*	70.72*	63.78*
Rubber	88.99*	93.23*	87.79*	76.38*	79.16*
Tools & Instruments	77.99*	74.10	65.80	52.91	50.61
Industrial Machineries	73.16	71.83	65.30	47.08	49.13
Automobile & Ancillaries	85.31	84.49	71.70	57.66	58.05
Electrical Engineering	43.75*	56.92	50.15	41.51	35.12
Mechanical Engineering	43.16	35.38	36.60	31.39	31.31
Metallurgical Industry	82.93	85.16	81.71	77.04	78.72
Alkalies & Allied Chem.	71.32*	70.55*	62.72*	47.28	46.63
Fertilizers	99.32*	95.91*	85.65*	82.16*	90.37*
Organic Chemicals	100.00*	100.00*	93.52*	78.38*	76.53*
Plastic Chemicals	100.00*	100.00*	89.19	68.13	65.09
Dyes	100.00*	100.00*	95.84	92.90	91.54
Drugs & Pharmaceuticals	53.33*	53.92*	55.28*	56.38*	55.21*

*Same as in Table 3-1.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

remaining 3 had multi-firm holdings since 1958. Two out of these 3 also showed declines in concentration in 1968.

When we examine the change in 8 single or multi-firm concentration ratios, as shown in Table 3-4, the same trend of declining concentration in the majority of industries is also evident, although less sharply. In 10 out of 17 industries (5 had no multi-firm holding), the ratios declined during 1948-1968. Again, in such traditional industries as cotton, jute and vegetable oil, the ratios increased somewhat, but in comparatively newer industries like engineering, the decline was more than 10 percentage points (except in metallurgical). In the chemical group, the picture is one of overall decline in concentration.

When we summarize these changes in 4-firm concentration ratios, the trend of declining concentration in most industries becomes quite apparent. In Table 3-5, we have tabulated the number of industries which had declined, increased and remained essentially constant from 1948 to 1968, along with their asset shares in 1968. About 70 per cent of the industries covered witnessed decrease in concentration during 1948-1968 with more than 75 per cent of total assets in 1968. Only in 3 out of these 22 industries do we find the evidence that the concentration ratios (both 4-firm and 8-firm) increased significantly during 1948-1968.

TABLE 3-4

SHARE OF 8 LARGEST SINGLE OR MULTI-UNIT FIRMS IN 22 INDIAN INDUSTRIES, 1948-1968

Name of Industry	8-Firm Concentration Ratios				
	1948	1953	1958	1963	1968
Cotton Textile	32.08	32.14	36.91	39.23	39.99
Woolen Textile	97.63	95.74	96.42	95.95	96.57
Synthetic Textile	100.00	100.00	100.00	99.94	100.00
Jute Textile	45.67	48.36	59.02	63.32	62.91
Paper	88.43	87.81	91.72	80.10	79.30
Cement	91.50	93.61	89.52	90.65	88.09
Sugar	31.73	33.85	35.44	29.39	28.22
Vegetable Oil	77.60	74.65	73.21	86.56	85.41
Glass	89.64*	90.68*	91.29*	91.72*	85.43*
Rubber	100.00*	99.04*	97.21*	95.30*	93.48*
Tools & Instruments	93.95*	89.26	80.82	70.64	70.39
Industrial Machineries	89.62	91.07	87.78	68.30	70.56
Automobile & Ancillaries	94.11	92.35	88.53	78.57	79.34
Electrical Engineering	62.30	75.64	73.22	65,61	53.13
Mechanical Engineering	62.09	54.36	56.14	50.61	48.85
Metallurgical Industry	92.39	93.11	86.45	85.42	85.71
Alkalies & Allied Chem.	91.30*	90.65*	84.07*	68.34	69.96
Fertilizers	100.00*	100.00*	98.74*	93.27*	91.97*
Organic Chemicals	100.00*	100.00*	97.52	92.72	88.98
Plastic Chemicals	100.00*	100.00*	100.00	92.08	92.05
Dyes	100.00*	100.00*	100.00	99.31	99.24
Drugs & Pharmaceuticals	74.28*	73.80*	72.49*	74.26*	75.85*

*Same as in Table 3-2.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

TABLE 3-5

SUMMARY OF 1948 to 1968 CHANGES IN CONCENTRATION BY INDUSTRY

Types of Measures	1968 Increasing		Decreasing		Constant[a]	
	Number	% Assets	Number	% Assets	Number	% Assets
4-firm Ratios	2	4.02	18	80.18	2	15.80
4 Multi-firm Ratios	3	18.29	17	77.27	2	4.44
8-firm Ratios	3	18.29	15	76.26	4	5.45
8 Multi-firm Ratios	3	18.29	15	76.26	4	5.45

[a]Less than 2 percentage points change over 20 years.

In Table 3-6 we have shown the change in the share of top 4 and 8 independent firms who did not belong to any managing agency or industrial house during 1948-1968. We would expect that in industries where the multi-firm holdings or firms under industrial houses are predominant, the share of independent firms would be lower. This we find was true for all five traditional industries where the control of managing agencies were extensive. Second, we would expect that the share of the independent firms would increase where the shares of firms controlled by managing agencies were declining. In Table 3-6 we find that the 4-firm concentration by independent firms increased in 10 industries, and remained constant in 5. This is also manifest in changes in 8-firm ratios. Almost all of those industries were dominated by multi-firm managing agencies whose shares decreased during 1948-1968.

TABLE 3-6

CHANGES IN THE LEVEL OF CONCENTRATION BY 4 AND 8 LARGEST INDEPENDENT FIRMS IN 22 INDIAN INDUSTRIES, 1948-1968

Industry	4-Firm Ratios					8-Firm Ratios				
	1948	1953	1958	1963	1968	1948	1953	1958	1963	1968
Cotton Textile	3.79	3.61	3.01	2.95	3.71	5.81	5.49	4.84	4.43	3.71
Woolen Textile	30.33	43.10	44.33	52.16	48.12	32.69	45.16	46.11	54.81	51.75
Synthetic Textile	1.43	1.80	1.02	1.30	1.11	1.43	1.80	1.02	1.30	1.11
Jute Textile	1.48	1.30	1.52	5.85	5.07	1.48	1.30	1.74	6.70	5.86
Paper	12.67	15.01	11.17	20.66	16.68	15.04	17.40	12.89	24.60	21.04
Cement	4.19	3.34	6.45	12.65	12.41	4.26	3.39	6.84	14.05	14.86
Sugar	8.29	8.38	7.73	7.78	7.76	12.22	12.68	12.87	13.05	12.98
Vegetable Oil	22.25	19.84	24.62	35.13	32.09	27.43	38.50	28.33	37.74	34.99
Glass	19.46	16.85	19.93	40.96	42.49	19.46	17.17	23.75	45.31	51.24
Rubber	87.54	91.99	78.05	58.94	64.63	94.21	96.29	80.58	62.00	67.04
Tools & Instruments	10.29	7.75	9.48	22.55	19.78	11.55	10.73	15.27	31.68	28.28
Industrial Machineries	34.37	40.02	32.74	23.39	18.55	36.54	41.42	40.00	28.72	23.63
Automobile & Ancillaries	3.16	3.12	3.13	6.65	4.99	3.16	3.12	3.79	9.67	7.41
Electrical Engineering	41.18	53.83	37.23	28.29	26.35	46.40	67.56	41.24	35.04	35.56
Mechanical Engineering	29.88	27.39	21.06	19.64	29.56	34.36	36.29	27.92	27.75	26.72
Metallurgical Industry	2.85	3.15	1.95	2.19	2.59	3.43	3.92	2.41	3.47	3.85
Alkalies & Allied Chem.	29.64	32.70	25.25	22.69	27.27	30.10	32.86	26.78	26.04	31.59
Fertilizers	11.52	11.98	9.68	38.64	71.84	11.52	11.98	9.68	38.92	72.59
Organic Chemicals	100.00	100.00	95.92	75.38	78.66	100.00	100.00	96.49	89.56	93.06
Plastic Chemicals	16.65	16.02	33.49	31.84	31.41	16.65	16.02	34.15	42.92	42.52
Dyes	100.00	100.00	79.37	63.36	62.79	100.00	100.00	81.24	67.87	67.62
Drugs & Pharmaceuticals	39.53	47.37	48.33	48.05	47.45	51.68	55.82	58.64	63.33	62.05

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

Finally, we would expect that in relatively newer industries like engineering and chemicals where the control of managing agencies were minimal, the forces which were behind the decrease in concentration ratios would also be working, so that concentration ratios by large independent firms would be declining. As seen in Table 3-6, in 8 out of 12 of these industries, the concentration ratios (both 4-firm or 8-firm) were either constant or decreased during 1948-1968. Thus, the trend of declining concentration in major industries in India is clearly evident in all kinds of concentration ratios--ratios for independent firms, or firms controlled by managing agencies, or both.

Changes in Relative Concentration, 1948-1968

The main defect in the measurement of 4-firm and 8-firm concentration ratios is that the ratios do not describe the entire size-distribution of firms, but only a slice of it. But a study of the structure of industries need not be confined to the top few firms. Changes in the disparity of firm sizes can have significant repercussions on competition in an industry even though the effects upon the leading firms or top asset class are minimal. These concentration ratios tell us nothing about the distribution of the shares (which ever variable we take), nor changes in this distribution within the groups.

The extent to which the Lorenz curve deviates from the diagonal of equal distribution is an indicator of relative concentration and is labeled as the area of concentration. The measurement of Gini coefficients (i.e., the proportion given by the area of concentration over the area below the diagonal of equal distribution) is a measure of inequality, and ignoring the unlikely extreme situation where all firms are of equal size so that the Gini coefficient is zero, any change in the Gini coefficient over the years will measure change in the relative firm-size distribution.[4] In Table 3-7, we have measured the Gini coefficients for the years 1948, 1958 and 1968 to show inter-temporal changes in this concentration. Here the result is opposite to that of 4-firm or 8-firm concentration index as seen in earlier Tables. Out of 22 industries, the Gini coefficients had decreased in 8 industries and remained constant in 5 industries from 1948 to 1968. Even in these 8 industries, the Gini coefficients decreased very slightly in 4 industries during these twenty years. Except in cotton textile, the coefficients rose more than 10 percentage points in 8 industries. Again, this index of relative concentration increase in comparatively new and fast growing industries in India barring three industries in the engineering group and one in chemical group where the Gini coefficients decreased significantly. Even in traditional industries like jute and

TABLE 3-7

GINI-COEFFICIENTS FOR 22 INDIAN INDUSTRIES
1948-1968

Industries	1948	1958	1968
Cotton Textile	.3507	.4124	.3845
Woolen Textile	.4831	.5307	.4337
Synthetic Textile	.3616	.4523	.4504
Jute Textile	.3408	.3799	.4608
Paper	.6366	.6731	.6035
Cement	.6560	.5855	.5640
Sugar	.3638	.4307	.3196
Vegetable Oil	.5707	.5269	.5755
Glass	.3396	.5135	.6311
Rubber	.5682	.5302	.4734
Tools & Instruments	.5682	.5302	.4734
Industrial Machineries	.6010	.5824	.5295
Automobile & Ancillaries	.7216	.6491	.6910
Electrical Engineering	.4988	.5904	.4833
Mechanical Engineering	.5117	.5186	.6092
Metallurgical Industry	.7289	.7524	.7367
Alkalies & Allied Chem.	.6467	.6899	.6286
Fertilizers	.6449	.6535	.6409
Organic Chemicals	.4756	.7005	.6972
Plastic Chemicals	.3751	.6296	.5817
Dyes	.2297	.4717	.5852
Drugs & Pharmaceuticals	.5972	.5882	.6856

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

cotton textiles, the Gini coefficients rose from 1948 to 1968; only in sugar and vegetable oil did the coefficients fall or remain constant.

Table 3-7 also brings the point home that the level of relative concentration was very high both in 1948 and 1968. In 11 out of 22 industries the Gini coefficients were above 50 per cent in 1948 while in 1968 the number rose to 15 industries. This high degree of relative concentration in most industries again reflects the fact that in an overwhelming number of industries in India the degree of concentration, both absolute and relative, was very high even where it declined during the period of our study.

In Table 3-8 we have taken some ordinal groups for closer examination. For all the 22 industries, we have computed bottom 20 and 40 per cents and top 10 and 20 per cents of firm size distribution for both 1948 and 1968. Here, as expected, the trends derived from the percentage changes in these groups follow a close parallel to those of Table 3-7. The percentage shares in the top 10 per cent group decreased in 5 industries from 1948 to 1968 and remained virtually constant in 7 industries. For the top 20 per cent group, percentage decrease of shares also had taken place in a very few industries. Only in 5 out of 22 industries the shares decreased significantly from 1948 to 1968, and remained constant in

TABLE 3-8

PATTERNS OF ASSET DISTRIBUTION FOR 22 INDUSTRIES, 1948-1968

Name of Industry	Shares of Ordinal Groups							
	1948				1968			
	Bottom 20%	Bottom 40%	Top 20%	Top 40%	Bottom 20%	Bottom 40%	Top 20%	Top 40%
Cotton Textile	4.57	9.89	38.32	29.75	3.92	7.14	48.64	37.03
Woolen Textile	4.93	11.10	51.87	31.56	2.68	10.17	55.88	36.91
Synthetic Textile	1.23	14.09	35.39	25.07	0.90	11.74	47.13	31.95
Jute Textile	4.98	17.44	39.66	23.30	4.38	13.44	52.41	38.49
Paper	1.91	4.83	65.21	44.67	1.22	3.46	60.17	36.14
Cement	0.26	4.07	70.05	56.80	3.45	10.49	60.55	49.82
Sugar	5.32	12.73	38.97	21.85	5.86	13.62	36.51	20.04
Vegetable Oil	2.41	9.02	63.81	48.47	2.63	8.62	65.27	46.50
Glass	7.05	15.63	48.63	28.37	0.28	2.42	63.74	36.54
Rubber	0.87	3.78	71.45	36.88	0.41	2.64	75.07	38.31
Tools & Instruments	4.74	12.36	59.99	36.17	5.59	13.69	55.54	31.65
Industrial Machineries	1.26	5.30	66.01	44.87	3.52	9.30	58.43	35.80
Automobile & Ancillaries	0.65	3.77	82.73	61.30	0.92	3.18	75.20	58.81
Electrical Engineering	3.11	11.06	54.54	38.46	1.86	7.84	56.68	39.09
Mechanical Engineering	4.31	10.72	55.66	36.65	1.44	6.22	65.58	48.01
Metallurgical Industry	1.29	3.77	82.09	69.74	0.39	1.54	84.86	71.26
Alkalies & Allied Chem.	0.58	2.34	69.36	45.01	1.32	5.91	69.82	45.12
Fertilizers	0.32	3.08	72.95	52.37	0.25	2.09	77.79	51.89
Organic Chemicals	1.09	4.37	55.70	42.03	0.38	1.94	75.47	58.41
Plastic Chemicals	3.36	7.79	50.02	30.57	0.58	8.33	57.00	39.60
Dyes	0.50	3.43	62.94	32.65	0.75	2.80	69.65	38.87
Drugs & Pharmaceuticals	1.74	6.47	65.85	45.99	1.01	3.38	75.72	55.12

6 industries. In both cases the main decrease took place in three engineering industries while for three chemical industries the percentage share in this group remained virtually constant.

For the change in shares of bottom 20 per cent groups, percentage shares had decreased in 12 industries, increased in 6, and remained constant in 4 industries during 1948-1968. Thus there had been considerable increase in relative inequality at the bottom of the distribution for most of the industries during this period. In the bottom 40 per cent group, the decrease in percentage shares had taken place in 9 industries, increased in 3, and remained virtually constant in 10 industries. Almost in all cases, the industries with decreased percentage shares at the bottom in 1968 showed increments for the top groups of the distribution, thus reflecting an increase in the Gini coefficients when the total array of the distribution is considered.

We have also measured changes in the Herfindahl index for 22 industries. It consists of the sum of the squares of firm sizes, all expressed as proportions of total industry assets. The Herfindahl index is an important summary measure of concentration as it is a measure of dispersion of firm sizes.[5] The index is equal to the reciprocal of the number of firms if all firms are of the same size, and reaches its maximum

value of unity when there is only one firm in the industry. The use of Herfindahl index is important for our study because it reflects the degree of inequality and fewness in the structure of the industry. As the 4-firm concentration ratios in most of the industries had decreased during 1948-1968 while the relative concentration in the Lorenz curve sense had increased, the Herfindahl index would show the relative concentration when inequality and fewness of firms are considered conjointly.

Table 3-9 presents Herfindahl indexes for 1948, 1958, and 1968. Here we find that in 10 out of 22 industries concentration had decreased during 1948-1968. This decrease in relative concentration took place in important industries like cotton, paper, cement, sugar, industrial machinery, automobile and ancillaries, fertilizers, among others. The drop was sharpest in cement, automobile and ancillaries, fertilizers, and organic chemicals. If we include the six industries where the index remained constant, the shares of assets in industries where the Herfindahl index either decreased or remained constant became 64.34 per cent of total assets in 1968. In 9 of these industries, the decrease in Herfindahl index was substantial.

In almost all industries the initial level of concentration as calculated for the base year 1948, was very high and

TABLE 3-9

HERFINDAHL[a] INDEX FOR 22 INDIAN INDUSTRIES
1948-1968

Industries	1948	1958	1968
Cotton Textile	.2793	.2665	.2358
Woolen Textile	.1907	.2259	.1853
Synthetic Textile	.2037	.1742	.1761
Jute Textile	.1379	.1486	.2027
Paper	.2737	.3140	.2311
Cement	.3592	.3308	.2846
Sugar	.1926	.1705	.1753
Vegetable Oil	.2809	.2471	.2721
Glass	.1613	.2201	.2535
Rubber	.2654	.3651	.2685
Tools & Instruments	.2065	.2987	.2024
Industrial Machineries	.2726	.2319	.2138
Automobile & Ancillaries	.4273	.3443	.3866
Electrical Engineering	.2100	.2929	.2715
Mechanical Engineering	.2062	.2572	.2737
Metallurgical Industry	.5079	.6905	.6691
Alkalies & Allied Chem.	.5198	.3828	.4010
Organic Chemicals	.4385	.4034	.3847
Plastic Chemicals	.2751	.2968	.2246
Dyes	.5336	.2167	.2248
Drugs & Pharmaceuticals	.2735	.2731	.3612

[a]Figures represent minimum estimates derived from grouped data on the assumption that firms within size-class are of equal size. There is presumably some upward biases in these estimates. See G. Rosenbluth, op. cit., p. 68, O.C. Herfindahl's comment, p. 95-99.

typically did not decrease appreciably in 1968. Only in three industries was the Herfindahl index below 20 per cent in 1948, 1958 and 1968. In 6 industries the 1948 index was above 30 per cent while in 1968 this was true for 5 industries. The implication of this finding is that largest firms' share typically rose but 4 or 8 largest firms' share typically fell during the period of our study.

When we summarize the number of industries and their share of assets in 1968 that showed changes by various measures of relative concentration, it becomes clear that relative concentration either declined or remained constant in more than half of the 22 industries covered. Table 3-10 reveals that about 50 per cent of total assets as composed of 22 industries in 1968, belonged to those industries which showed increase by all four concentration measures. Only about a fourth of total assets measured by Gini coefficients and a third as measured by Herfindahl index belonged to the industries showing a clear decline by relative concentration. For the measures relating to top 10 per cent or 20 per cent of firms, the declining industries commanded less than a fifth of the total assets of 22 industries in 1968.

This increase in relative concentration in most of the industries in the face of a general decline in absolute concentration can be explained by two facts. First, the policy

TABLE 3-10

SUMMARY OF CHANGES IN CONCENTRATION AMONG 22 INDUSTRIES BY RELATIVE MEASURES

Measures of Concentration	1968					
	Increasing		Decreasing		Constant	
	No. of Ind.	% Assets	No. of Ind.	% Assets	No. of Ind.	% Assets
Gini	9	51.01	8	24.89	5	24.10
Herfindahl	6	48.49	10	39.22	6	12.29
Top 10% of Firms[a]	10	51.53	5	17.51	7	30.96
Top 20% of Firms[a]	12	56.22	6	18.21	4	25.57

[a]In Appendix F we have shown changes in the number of firms over the years.

of the Government of India in this period was quite successful in discouraging managing agencies to enter into relatively new engineering and chemical industries, along with forcing managing agents to curb their activities and give up control over many established firms. As shown in Table 4-6 in the next chapter, the industrial licensing policy of the Government thwarted the expansion of large firms more effectively than the rest of the industries. Second, as the number of firms increased during this period in almost all industries, the new firms were relatively larger in size and technologically more efficient. This along with the declining share of 4 or 8 firms swelled the ranks of firms at the upper half of the size distribution. While the small firms became relatively

smaller as the years advanced, and some went bankrupt, firms situated in the upper size-classes improved their relative positions. Since the share of the 4 or 8 largest firms has been declining in most industries, the share of smaller firms must have been declining even more, thus worsening the relative distribution of firm size. Thus the implication is that the role of medium-sized firms have become more significant in the majority of Indian industries.

Economic Causes of Change in Concentration

In this section we will test some of the important hypotheses that have been put forward in economic literature to explain the change in industrial concentration over time. The variables which are likely to be associated with the change in concentration are high initial levels of concentration, fast growth in the number of firms and fast growth of the industry. The last two variables will be tested further as explanatory variables in our regression models in chapter VI.

A. Initial Level

According to Professor Stigler, the oligopolists will give up part of their market share over time in order to have long-run profit maximization.[6] For by charging a high price in the short run, future entrants to the industry are encouraged by the high profits that are being earned; and a lower

price and lower concentration result in the long run through entry of new firms into the industry. Contrary to this hypothesis, Professor Bain with his "limit price" theory contends that firms will set a "limit price," so that the resulting profit rate will discourage potential entrants. Hence concentration will not fall, and may increase if oligopolists use very low prices to drive small firms out of business.[7]

In order to test these opposing hypotheses, we have cross-classified the 22 Indian industries by initial (i.e., 1948) level of 4-firm concentration and subsequent changes over 1948-1968. As shown in Table 3-11, there is a significant association between high initial level of concentration and subsequent decline. In 12 out of 22 industries, the 4-firm concentration ratios were over 70 per cent in 1948 and 11 out

TABLE 3-11

INDUSTRIES CROSS-CLASSIFIED BY 4-FIRM CONCENTRATION, 1948 AND CHANGES OVER 1948-1968

Changes Over 1948-1968	4-firm Concentration, 1948		
	0-29%	30-69%	70-100%
Increase	2	2	0
Decline 0-5%	1	0	1
5-10%	0	2	4
Over 10%	0	3	7

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

of these 12 declined by more than 5 percentage points during 1948-1968. Only 4 industries showed increases which had initial concentration ratios below 70 per cent.

We have also used the regression analysis to examine whether change in concentration was systematically associated with the initial level. The fitted equations are:

$$\Delta C_4 = 8.8827 - \underset{(3.4828)}{0.3051}\ IC \qquad R^2 = .3772 \qquad F = 12.15, \quad N = 22$$

and

$$\Delta C_8 = 7.5211 - \underset{(2.2598)}{0.1948}\ IC \qquad R^2 = .2034 \qquad F = 5.10, \quad N = 22$$

where IC is the initial level of concentration (1948), and ΔC_4 and ΔC_8 are changes in 4-firm and 8-firm concentration ratios. The t-values are given in parentheses which are significant at 0.01 per cent level. The high values of b-coefficients in both the equations indicate that the very high initial level of concentration in most Indian industries tended to "slow down" subsequent increase in concentration, and in fact explain a substantial part of the decrease in the level of concentration during 1948-1968. This is not an isolated event that occurred in India alone. For the U. S. manufacturing industries with 1954 concentration ratios from 61 to 100, 35.9 per cent of concentration changes were found to be increases and 64.1 per cent decreases in 1963.[8]

B. Changes in the Number of Firms

Changes in the number of firms are usually thought to reflect the conditions of entry into the industry. High barriers of entry will help sustain an oligopoly, whereas low barriers to entry will aid new entrants. The increase in the number of firms will tend to lower concentration because the market share obtained by new firms will lower the relative concentration at the top, particularly when the market is relatively fixed. So with a high rate of entry of new firms, the relative shares of firms at the top are expected to decline over time.

In Table 3-12, we have calculated the annual growth rate in the number of firms, for each of the four sub-periods. The highest entry rate of firms occurred during 1958-1963 when in 16 industries it was more than 3 per cent per year; in 1953-1958 it was this high in 14 industries. Growth by 5 per cent and above took place in 14 industries in 1958-1963, and the number stood at 9 industries in 1953-1958. During 1948-1953 only in 4 industries there were new firms by more than 3 per cent of the total, while in 1963-1968 it occurred in 3 industries only.

When we examine industries falling in the engineering group, we find that the entry rate of firms was more than 5 per cent annually in all six engineering industries during

TABLE 3-12

ARITHMETIC AVERAGE OF ANNUAL GROWTH RATE (%) OF NUMBER OF FIRMS IN 22 INDIAN INDUSTRIES 1948-1968

Name of Industry	Annual Growth Rates				
	1948-1953	1953-1958	1958-1963	1963-1968	1948-1968[a]
Cotton Textile	0.72	2.79	1.77	0.45	1.57
Woolen Textile	2.00	0.00	1.81	0.00	1.00
Synthetic Textile	2.85	5.00	4.00	-1.66	2.85
Jute Textile	-0.56	-0.28	-1.42	-0.92	-0.75
Paper	-0.83	3.47	11.85	0.00	3.95
Cement	2.22	3.00	-0.90	2.00	2.23
Sugar	0.40	3.00	0.16	0.33	1.22
Vegetable Oil	2.06	-2.00	-4.03	0.00	-1.03
Glass	3.33	0.00	4.28	0.00	2.08
Rubber	2.22	4.00	5.71	0.00	5.00
Tools & Instruments	9.09	6.25	8.57	4.00	11.36
Industrial Machineries	0.00	1.11	15.78	1.76	5.26
Automobile & Ancillaries	1.25	7.05	8.56	4.11	7.81
Electrical Engineering	2.58	5.71	9.77	1.19	6.45
Mechanical Engineering	3.72	5.09	11.56	0.39	6.97
Metallurgical Industry	0.80	8.46	11.35	1.03	7.20
Alkalies & Allied Chem.	1.17	10.00	8.88	0.51	6.76
Fertilizer	5.71	2.22	14.00	2.35	8.57
Organic Chemicals	0.00	4.00	26.66	4.28	12.00
Plastic Chemicals	0.00	20.00	17.50	1.33	15.00
Dyes	0.00	50.00	8.57	0.00	20.00
Drugs & Pharmaceuticals	2.85	0.62	3.03	0.52	1.96

[a]Arithmetic average growth rate is measured by (1968/1948)-100.

Source: Basic data taken from Kothari's Economic Guide and Investors' Handbook of India, various issues, covering 1948-1968.

1953-1963, with the exception of industrial machineries when it was a mere 1 per cent in 1953-1958. In the chemical group, the rate was much higher during 1958-1963 than in 1953-1958, except in dyes where the percentage jumped to 50 per cent in the latter period. Only in the jute textile and vegetable oils industries was there a net decrease in the number of firms during 1948-1968. As shown in Table 3-1, both were slow-growing industries and, in the case of jute, the shattering impact of the partition of the Indian Subcontinent in 1947, the continuous decline of the world price and the development of substitute products had created such a persistent crisis that many existing firms went out of business during this period. Besides these two industries, only in paper was there a decrease in number of firms during 1948-1953, but the situation was reversed by the entry of new firms after 1953, with an annual average overall growth rate of about 4 per cent.

Thus except for jute and vegetable oil, the number of firms increased significantly in almost all of these major industries in India during 1948-1968, and particularly during 1958-1963 when the decline in concentration ratios was highest in most industries. The growth rate in the number of firms was more than 5 per cent in 1948-1968 for all engineering and chemical industries except drugs and pharmaceuticals. Again, these were the industries showing the greatest decline

in both 4-firm and 8-firm concentration for the same period. In the "traditional" Indian industries like cotton, jute, cement, paper, and sugar, the change in the number of firms during 1948-1968 was less than 2 per cent per annum, a sector where the change in concentration ratios was also minimal.

When we use the regression analysis to see whether there is a systematic relationship between changes in concentration and changes in the number of firms during 1948-1968, we find the following results:

$$\Delta C_4 = 3.7084 - \underset{(2.9877)}{0.0729}\Delta NF \qquad R^2 = .307 \quad F = 8.86 \quad N = 22$$

and

$$\Delta C_8 = 3.2745 - \underset{(2.5998)}{0.0568}\Delta NF \qquad R^2 = .301 \quad F = 7.14 \quad N = 22$$

where ΔC_4 is the percentage change in 4-firm concentration ratios, ΔC_8 is the percentage change in 8-firm concentration ratios, and ΔNF is the percentage change in the number of firms. In both these equations the t-values in parentheses are significant at .01 and .05 per cent levels for the first and second equations respectively. Thus the growth in the number of firms appears as an important factor in explaining the decline in concentration ratios in major industries of India.

C. Growth Rate of Industries

Professor Baumol and others have suggested that with fast growth of an industry new entrants are encouraged to enter through the attraction of higher profits, and also barriers to entry may appear less formidable in an expanding market.[9] So we would expect a negative relationship between the growth of an industry and changes in associated concentration. With an (arithmetic) average annual growth rate of assets over 10 per cent in 19 of the 22 industries during 1948-1968, we would expect a significant correlation (negative) between growth and concentration.[10]

In Table 3-13 we have calculated the relationship between the growth rates of 22 industries and changes in 4-firm concentration ratios of these industries during 1948-1968. In the majority of industries we find that the concentration ratios had declined more sharply in industries having higher growth rates. In 14 out of 22 industries having average annual growth rates in excess of 30 per cent during this period, the 4-firm concentration ratios decreased by more than 5 percentage points. A much larger decrease in concentration ratios took place in the 6 industries where the average annual growth rate of assets was above 30 per cent over these two decades.

The increase in 4-firm concentration ratios occurred only in 4 industries, in 3 of which the 1948-1968 growth rate

TABLE 3-13

RELATION BETWEEN INDUSTRY GROWTH RATES AND CHANGES IN CONCENTRATION IN 22 INDIAN INDUSTRIES 1948-1968

Arithmetic Average Growth Rates of Industries 1948-68	Increase of 4-firm Ratios 1948-68				Decrease of 4-firm Ratios 1948-68							
	Less than 5%		5 to less than 20%		Less than 5%		5 to less than 10%		10 to less than 20%		20% and over	
	No. of Ind.	%	No. of Ind.	%	No. of Ind.	%	No. of Ind.	%	No. of Ind.	%	No. of Ind.	%
Less than 10%	1	4.55	2	9.09								
10 - 20%					1	4.55	2	9.09				
20 - 30%	1	4.55										
30% and Over					1	4.55	4	18.18	4	18.18	6	27.27
All Industries Increasing by Less than 20%	1	4.55	3	13.63	1	4.55	1	4.55				
All Industries Increasing by More than 20%	1	4.55			1	4.55	4	18.18	4	18.18	6	27.27

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

was the lowest of the 22. These were the "traditional" Indian industries of cotton, jute, and vegetable oil where the average annual growth rate of assets was much lower (about 6 per cent on the average). The only exception was drugs and pharmaceuticals which showed a growth rate of about 30 per cent and an increase in 4-firm concentration ratio of about 2 per cent. Thus it is clear that the degree of concentration declined more sharply the greater the growth rate for most of the industries.

We have also used the regression equation for the period to test the systematic association between the two variables. The fitted equations are:

$$\Delta C_4 = 7.2500 - \underset{(4.0563)}{0.0288}\ \Delta AS \qquad R^2 = .450 \qquad F = 16.37 \qquad N = 22$$

and

$$\Delta C_8 = 6.4379 - \underset{(3.3809)}{0.0116}\ \Delta AS \qquad R^2 = .394 \qquad F = 11.89 \qquad N = 22$$

where ΔC_4 is the percentage change in 4-firm concentration ratios, ΔC_8 is the percentage change in 8-firm concentration ratios, and ΔAS is the average annual growth rates of assets in 22 industries. In both the above equations t-values are given in the parentheses which are significant at .01 and .05 levels for the first and second equations respectively. Thus the regression reveals that the growth rate of assets was also instrumental in reducing the level of concentration in most Indian industries during 1948-1968.

International Comparison of Industrial Concentration

There are always problems when comparing the level of industrial concentration in two countries. Fundamental differences in the nature of data gathering and classifications used yield seemingly contradictory results even for countries similarly situated. The best example of this kind of confusion can be seen in comparisons of concentration between the United States and the United Kingdom. Professor P. Sergant Florence in 1961 has found "an amazing similar picture in both countries" for the year 1935--both for the general level and for the identity of industries which were highly concentrated.[11] Rosenbluth in 1955, using the same data, found that the level of concentration was higher in Great Britain, after allowing for the discrepancy caused by 3-firm ratios in Britain and 4-firm ratios in the U. S. A.[12] Shepherd in 1961, working with 1951 data for both countries, found rough similarity with a tendency for the United States to have higher concentration, after allowing for the "3-4 mismatch."[13] Bain in 1966 found the general concentration picture in the two countries roughly the same.[14] Pishighian in 1968 found that the United Kingdom had the higher levels of concentration in over half of the total industries.[15] Sawyer reached the same conclusion in 1971.[16] Finally, with Pryor's study in

1972 the matter had come full circle as he found again the similarity in the degree of industrial concentration between the United States and the United Kingdom.[17]

Thus when an international comparison of industrial structures is made, the path is strewn with pitfalls. Our problem is more complicated because of the fact that here we are comparing advanced industrialized nations with one of the prominent underdeveloped nations of the world. However, our main purpose here is to test the hypothesis that the level of concentration varies inversely with market size (domestic or foreign). The reason behind this hypothesis is that a single minimum-efficient scale (MES) or optimal size enterprise may produce more than to supply the small market of a nation, while in countries like the United States, domestic consumption alone is equal in many cases to the production of many MES or optimal size firms. Following this hypothesis we would expect, then, that the level of industrial concentration in India, with a comparatively smaller market, would be higher than that of the United States, United Kingdom or Japan, and would be similar to that of Canada.

In Table 3-14, we have shown juxtaposed the 4-firm and 8-firm concentration ratios for the year 1963, with U. S. SIC code to indicate the nature of aggregation in the industrial classification. Here we find that in almost all of the U. S.

TABLE 3-14

4-FIRM AND 8-FIRM CONCENTRATION RATIOS IN THE U.S. AND INDIAN INDUSTRIES, 1963

Name of Industry	U.S. SIC Code	4-firm Ratios		8-firm Ratios	
		U.S. (shipments)	India (assets)	U.S. (shipments)	India (assets)
Cotton Textile	2211,41,53-56	22	14	34	23
Woolen Textile	2231,2283	38	76	49	94
Synthetic Textile	2221	31	74	39	99
Jute Textile	...	...	26	...	37
Paper	2611,2631	31	51	57	68
Cement	3241	29	66	49	82
Sugar	2062	63	18	83	26
Vegetable Oil	2091-93	48	66	69	82
Glass	3211-31	65	71	81	92
Rubber	3011-31	75	77	88	95
Tools & Instruments	3541-44,3811-41	27	50	38	67
Industrial Machineries	35	37	41	49	67
Automobile & Ancillaries	3713-15,17,41-42,51	61	58	70	74
Electrical Engineering	36	48	41	63	62
Mechanical Engineering	34	32	31	34	45
Metallurgical Industry	33	44	77	55	86
Alkalies & Allied Chem.	2812-13	67	43	91	67
Fertilizers	2844	38	82	50	93
Organic Chemicals	2818	51	78	63	93
Plastic Chemicals	2821	35	65	49	89
Dyes	2851	23	92	34	99
Drugs & Pharmaceuticals	2834	22	38	38	74

Source: U.S. Senate, Concentration Ratios in Manufacturing Industry, 1963, and Kothari's Economic Guide and Investors' Handbook of India, 1970.

industries listed, the degree of concentration was much lower than that of India. The 4-firm concentration ratios were lower in the United States in 16 out of 21 industries (jute being excluded), while the 8-firm ratios were lower in 18 industries. In one-third of these industries the 4-firm ratios were above 50 per cent in the U. S. A. while for India it was exactly two-thirds. Thus with much larger markets and much higher supply, most U. S. industries showed a decisively lower level of concentration than did their Indian counterparts.

When we look into the trend of the concentration ratios in these two countries, we find that the level of concentration had declined significantly in India during 1948-1968. In the United States, on the other hand, the moderate trend toward increasing industry concentration from 1954 to 1963 was continued and accelerated from 1963 to 1966, as Professor Bain's latest study has shown.[18] He has tried to explain this increase as the result of vigorous merger activity and increasing concentration in the U. S. manufacturing sector as a whole. For India, the main causes of the decline are to be found in the economic forces explained in the earlier section, the absence of significant merger activity and the pursuit of Government policy to curb the managing agencies.

In Table 3-15, we have compared the engineering and chemical industries of the United Kingdom with those of India

for the year 1963. The sample of industries is too small to reach any definitive conclusion, but, nonetheless, can be used to make a rough estimate of the levels of concentration in these two countries. As the engineering and chemicals are the growth industries in India, and so becoming more important in the industry total, the comparison would highlight the important segments of industries of these two countries. The inspection of Table 3-15 indicates that as in the United States, the level of concentration is much lower in the United Kingdom as compared to India. In only 2 out of

TABLE 3-15

4-FIRM CONCENTRATION RATIOS AMONG ENGINEERING AND CHEMICAL INDUSTRIES IN U.K. AND INDIA 1963

Name of Industry	U.K.	India
Tools & Instruments	24	50
Industrial Machineries	59	41
Electrical Engineering	45	41
Mechanical Engineering	14	31
Metallurgical Industry	41	77
General Chemicals	29	61*
Fertilizers	56	82
Plastic Chemicals	61	65
Dyes	75	92
Drugs & Pharmaceuticals	29	38

*Average of alkalies and organic chemicals.

Source: M.C. Sawyer, "Concentration in British Manufacturing Industry," Oxford Econ. Papers, Nov., 1971, and Kothari's Economic Guide and Investors' Handbook of India, 1970.

these 10 industries the 4-firm concentration ratios were higher in the U. K. than in India, and only in one industry the ratio was higher than 5 percentage points. The 4-firm ratios for the U. K. were lower by more than 10 points in 7 industries, and more than 20 points in 5 industries out of this total of 10 industries. Thus, contrary to general supposition, even in the same kind of industries, the level of concentration was markedly different in these two countries which can be explained by the difference in the size of the respective markets.

Again, the trend in the Indian industries is toward declining concentration, particularly for the engineering and chemical industries as seen during 1948-1968. But the level of concentration in the manufacturing sector of British industry has increased modestly over the years 1958-1963. Professor Sawyer has tried to explain this increase by the general decrease in the number of firms which occurred over this period, reflecting the widespread acquisition activity which took place in the U. K.[19] In India, on the other hand, the increase in the number of firms was significant in reducing the degree of concentration in most industries. Also, the merger activity was minimal in India for the period studied.

Professor Rosenbluth in his recent study on Canadian industries has provided data for 8-firm concentration ratios

in principal Canadian industries in 1964.[20] In Table 3-16 we have compared this body of data (where sales is the measuring unit) with similar Indian industries for 1963. Here we find that the degree of concentration in these two countries is almost similar for the years compared. The 8-firm concentration ratios are higher in Canada than India in 7 industries out of 14, while in India it is higher in 6 industries, with one being the same in both the countries. In 10 Canadian and

TABLE 3-16

8-FIRM CONCENTRATION RATIOS AMONG INDIAN AND CANADIAN INDUSTRIES

Name of Industry	Canada, 1964	India, 1963
Cotton Textile	89	23
Woolen Textile	48	94
Synthetic Textile	83	98
Paper	62	36
Cement	98	81
Rubber	80	91
Tools	38	67
Automobile & Ancillaries	74*	74
Electrical Engineering	84*	62
Metallurgical Industry	94*	85
Alkalies	72	67
Fertilizers	91	93
Plastic Chemicals	97	89
Drugs & Pharmaceuticals	36	74

*Average of the group.

Source: G. Rosenbluth, "The Relation between Foreign Control and Concentration in Canadian Industry," Canadian Journal of Economics, Feb., 1970, pp. 20-21; and Kothari's Economic Guide and Investors' Handbook of India, 1966.

9 Indian industries the ratios were 74 per cent and over. The difference in the degree of concentration was significant only in 5 out of these 14 industries.

Our study thus confirms Professor Bain's observation that concentration in both of these countries is much higher than in the U. S. or U. K. They are closer because the degree of concentration is related mainly to the smaller size of the market.[21] But in most of these Indian industries concentration had declined over the past twenty years (1948-1968) as seen in Table 3-4. For Canadian industries, on the other hand, concentration had increased, as pointed out by Rosenbluth, in comparing 1964 to his earlier study for 1948. This can be explained for Canada by examining the relationship between industrial concentration and the degree of foreign control (namely U. S.) over Canadian industries. As this foreign control had increased in Canada over the past sixteen years, so also has the degree of industrial concentration.[22]

This hypothesis is also true for countries like Great Britain where J. H. Dunning examined a sample of 205 U. S.-owned firms in Britain and found that 148 of them were either the dominant producers or one of a small number of leading producers in their respective industries. Moreover "three quarters of the employment in the United States-affiliated firms is concentrated in industries where the five largest competitors

supply 80 per cent or more of the total output."[23] In the case of India, foreign domination in industries was minimized by Governmental banning of majority ownership of concerns by foreigners and also by discouraging direct foreign investment since 1956. Also, by 1956, most of the firms controlled by British managing agencies had been passed on to Indian Houses. Thus being free from foreign domination, the underlying economic forces in the Indian industries, as seen in Section III above, were instrumental in reducing the level of concentration in India, while in Canada foreign control has become a potent factor for the increase in industrial concentration.

When we try to compare the industrial concentration of India with that of Japan, we find that the industrial classifications for Japan are too narrow for meaningful comparisons with our industries. At the same time, they are not narrow enough to fall into the product categories as described in the Report of the Monopolies Inquiry Commission for India (see Appendix B). However, in Table 3-17 we have selected 15 similar industries and provided the concentration ratios by top 3-firms according to their share in production. Here we find that for most industries the degree of industrial concentration is much higher in India than in Japan. In almost all industries except cotton and sugar, the 3-firm concentration ratios are significantly higher for India. For concentration over 50 per

cent, 10 out of 15 industries fell into this group in India, while in Japan it was true for 5 industries only.

TABLE 3-17

PRODUCTION CONCENTRATION BY TOP THREE FIRMS IN JAPAN AND INDIA

Name of Industry	Japan, 1962	India, 1964
Cotton	13	13*
Rayon Yarn	60	64
Cement	47	63
Paper	36	51
Beer	99	100
Sugar	33	18*
Sewing Machine	30	84
Pig Iron	68	100
Drugs & Pharmaceuticals	22	56*
Sulfuric Acid	23	29
Ammonium Sulphate	32	90
Superphosphate	32	37
Urea	56	100
Caustic Soda	23	41
Dyes	62	92*

*4-firm ratio based on our estimates for 1963.

Source: For Japan: E.M. Hadley, Antitrust in Japan, Ch. 14, and Oriental Economist, May, 1963, p. 258; for India: Report of the Monopolies Commission, Appendix C, and Kothari, Economic Guide and Investors' Handbook of India, 1966.

When we examine the trend of industrial concentration in these two countries, we see that in India, with the expansion of markets and increased viability of the economy, the level of concentration had declined significantly since 1948. This was also evident in Japan until recently. A number of

economic scholars maintain that the reason why the industry's move toward oligopoly was more or less levelling off during 1956-1963 was because of the extremely rapid expansion of markets and the equally brisk advance of technological innovations.[24]

Two important factors are working today for the increase in Japanese industrial concentration. One is the spate of mergers, which as in most other industrialized states, has accelerated recently in Japan. For example, 894 business mergers had taken place in Japan in 1965 against 381 for 1956.[25] While Japanese industries are moving toward a state of oligopoly through business mergers, this phenomenon is almost absent in India. The other factor is the avowed policy of the Japanese Government to consolidate the nation's economy through direct and indirect intervention.[26] In India, on the other hand, the economy is going through another period of more stringent Government action, "to foil any excess of economic concentration."[27]

As regards industrial concentration among developing countries, unfortunately few data are available to quantify any hypothesis about structure. Professor Bain in his study on international differences in industrial structure included India as the only case study for an underdeveloped country. Professor Pryor has taken not a single underdeveloped area in his recent study on the industrial structures among twelve

nations, mainly due to lack of adequate data. We are thus not able to compare India with any other underdeveloped country regarding industrial structure.

There are some assertions in economic literature that the market structure in the agricultural sector of an underdeveloped country is atomistic and near-perfect, and that for the industrial sector it is monopolistic. The view that the agricultural sector of developing countries is typically extremely competitive is advanced by Edward Mason when, in contrasting concentration of economic power in the United States and Britain with less developed countries such as India and Pakistan, he says, "In India and Pakistan....where half to two-thirds of the national income comes from, and three-quarters to four-fifths of the labor force is employed in agriculture, general concentration is low."[28] Benjamin Higgins says that in Indonesia and the Philippines, at least, it has been "the monopolized industrial sector that expanded, not the competitive rural sector."[29] Other economists like Mintz, Ruttan and Bauer have found scattered evidence supporting this hypothesis when they studied selected agricultural market structures in some underdeveloped countries.[30]

On the other hand, there are economists who view the agricultural market structure as no different than that of industrial structure. Morton Solomon argued in 1948 that,

except in manufacturing, there are generally more imperfections in developing than developed countries.[31] Willard Mueller has argued that the conditions of developing economies result in so much buyer attachment and other types of product differentiation that anything more competitive than monopolistic competition is unlikely.[32] Similar views have been expressed in recent years by Hla Myint, Philip Raup and Gunnar Myrdal, none of whom attempted to buttress their assertions with evidence.[33] Since we have little information available at the present time to make a meaningful comparison of industrial structures among underdeveloped countries, we have no choice but to wait for the development of adequate data to probe further in this direction.

NOTES

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[2]J. S. Bain, International Differences in Industrial Structure (New Haven, 1966).

[3]Government of India, Report of the Monopolies Inquiry Commission (New Delhi, 1966).

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[9]W. Baumol, "On the Theory of Expansion of the Firm," Am. Econ. Rev., Dec., 1962, pp. 1078-87.

[10]Calculated from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

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[12]G. Rosenbluth, "Measures of Concentration," in Business Concentration and Price Policy, ed. by G. L. Stigler (Princeton, 1955).

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[19]M. C. Sawyer, op. cit., pp. 352-75.

[20]G. Rosenbluth, "The Relation Between Foreign Control and Concentration in Canadian Industry," Canadian Jour. Econ., Feb., 1970, pp. 20-21.

[21]J. S. Bain, op. cit., 1966.

[22]G. Rosenbluth, op. cit., pp. 17-18.

[23]J. H. Dunning, American Investment in British Manufacturing Industry (London, 1958), pp. 115, 156-7.

[24]"Production Concentration in Industry," The Oriental Economist, July, 1967, pp. 411-16.

[25]Ibid., p. 411.

[26]J. C. Lobb, "Japan, Inc.--The Total Conglomerate," Columbia Journal of World Business, March-April, 1971, pp. 39-45.

[27]The Statesman Weekly, Sept. 5, 1971.

[28]E. S. Mason, Economic Concentration and the Monopoly Problem (Cambridge, 1959), p. 39.

[29]B. Higgins, Discussion of Arnold C. Harberger, "Using the Resources at Hand More Effectively," Am. Econ. Review, May, 1959, p. 170.

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[33]Hla Myint, "An Interpretation of Economic Backwardness," Oxford Econ. Papers, June, 1954; P. Raup, "Land Reform and Agricultural Development", in Southworth and Johnston, Agricultural Development and Economic Growth; Gunnar Myrdal, Asian Drama, 1968, p. 1887.

CHAPTER IV

ECONOMIC CONCENTRATION BY THE MANAGING AGENCY SYSTEM 1948-1968

A unique feature of the structure of Indian industry is that, for all practical purposes, a few leading industrial houses, behind the facade of the managing agency system, control and guide a major part of Indian industry.[1] New competition seldom finds an opportunity to enter the closely preserved and well-organized industrial oligarchy. In spite of the past fifteen years' economic planning the situation has not changed much. This concentration of control over the industrial field by a few giant firms is primarily an outcome of the growth of the well-known Managing Agency System --an organization created for promoting, financing, and managing industrial ventures.

History of the Managing Agency System

The Managing Agency is a partnership firm or a private limited company typically controlling a number of related and unrelated enterprises. It is not unusual to find a Managing

Agency administering a collection of enterprises that would include mines, plantations, industrial firms, public utilities, banks, shipping interests, sales agencies, and investment trusts.[2] The origin of the Management Agency System dates back to the days of the East India Company in the early part of the 19th Century. The "agency houses" of those days later gave way to the European firms of Managing Agents of more recent times. In the words of Professor Tripathi "On the ruins of these agency houses a new organization of British capital enterprise arose--the managing agency system--which ushered in the industrial development of India and with it a new age".[3] The device was originally adopted to ensure the supply of foreign capital for industrial ventures in India and was later on found to be highly useful for attracting investment of indigenous Indian capital.[4] As Dr. Andrew Brimmer has pointed out, due to the absence of issue-houses of the Western type, the Managing Agents used to promote new businesses by floating shares of new concerns and holding such shares temporarily, giving an opportunity to the new concerns to consolidate their position during the difficult period of initial growth.[5]

In the period before August, 1947, industrial finance corporations were conspicuous by their absence. The Indian Commercial banks followed the practice of the Imperial Bank

and required two signatures (one of the company concerned and the other of the Managing Agents as an additional safeguard) from an industrial concern requiring a loan. Under such circumstances, the Managing Agents occupied a central role in the financing process. While in the Western Countries the issue houses generally do not keep a long interest in the companies whose shares they float and never work as managers, in India the Managing Agencies served this dual role from the very beginning of corporate evolution. As the numerous shareholders preferred to leave the decision-making and management to the few who initiated the ventures, the result was that the Managing Agents, in spite of holding a minority of shares, became the promoters, financiers, and managers of the companies they floated. Indians with business acumen, capital and enterprising talents followed suit, and the result was the virtual control of the Indian industry by less than a hundred managing agency houses.[6]

The peculiar feature of the Managing Agency System is that the managing agency works as a contractual party with the firm in exchange of a percentage fee of net profit for the managerial and other services provided. "The managing agencies appointed their nominee as the Chairman of the Board of Directors, often provided finance, and on top of the return on their capital investment, earned a commission on sales and

also 'management fees'."[7] The system took root in cotton, jute and tea because, as Rungta has pointed out, while joint stock organization made the launching of industrial enterprises possible, only the mercantile community in India had the resources and the desire to form them.[8] When the founding of a number of shipping, coal mining and sugar manufacturing companies ushered in the next stage of the growth of business corporations in India, the agency houses were found to hold the managing agencies of these new companies without necessarily possessing a controlling interest. The main reasons for this role of Managing Agencies were the absence of an investing class, shortage of managerial talent and entrepreneurial activities.

Unfortunately, during the last hundred years, the Managing Agency System became the source of much abuse and malpractice. The lesser known promoters started their companies quietly, financing them largely from their own resources and with the help of friends and relatives, and after declaring one or two large dividends, unloaded their holdings on the market. Control was maintained through a tight managing agency contract.[9] At one end of the spectrum, the smaller managing agents were interested only in earning their commission and had little regard for the welfare fo the firm or the shareholders. At the other end the large managing agencies

reaped the benefits accrued from the monopolistic control of industries. It thus became apparent after the independence of India in 1947 that a reorganization of industrial management was vitally necessary for the planned growth of the economy, and that alternative systems of management must be evolved, involving the gradual replacement of the Managing Agency System.[10]

Changes in the Role of Managing Agency Firms 1948-1968

In Table 4-1 we have calculated the percentage changes in both the number and asset size of firms under managing agencies during 1948-1968. Here we find that the percentage of numbers and assets of firms administered by managing agencies had decreased in the majority of industries. In 15 of the 22 industries under study, the percentage of the number of firms under the control of the managing agencies had decreased significantly, i.e., more than 5 percentage points, while in 12 industries the percentage of industry assets under the managing agency firms had decreased by more than 5 percentage points. In 8 industries the percentage decrease in number of firms was 20 per cent or over while a decrease of assets at 20 per cent or more occurred in 7 industries.

TABLE 4-1

HOLDINGS OF MANAGING AGENCIES IN 22 INDIAN INDUSTRIES, 1948-1968

Industries	1948		1968	
	Percentage of Firms Under Man. Agen.	Percentage of Assets Under Man. Agen.	Percentage of Firms Under Man. Agen.	Percentage of Assets Under Man. Agen.
Cotton Textile	48.55	87.63	50.12	68.99
Woolen Textile	50.00	69.30	41.67	48.24
Synthetic Textile	71.43	98.56	72.73	98.88
Jute Textile	93.24	97.24	80.64	85.98
Paper	66.67	77.63	46.51	71.96
Cement	77.78	95.80	76.19	90.08
Sugar	81.44	81.29	55.74	60.17
Vegetable Oil	65.52	72.92	52.17	61.08
Rubber	11.12	5.78	38.89	19.14
Tools & Instruments	63.64	89.70	30.56	56.16
Industrial Machineries	66.67	72.44	38.89	70.29
Automobile & Ancillaries	75.00	97.09	51.22	82.19
Electrical Engineering	45.16	46.03	33.80	43.78
Mechanical Engineering	62.81	55.54	46.08	53.34
Metallurgical Industry	76.01	96.45	53.34	95.30
Alkalies & Allied Chem.	82.35	62.41	52.50	64.05
Fertilizer	66.66	82.51	57.90	37.35
Organic Chemicals	...	...	17.65	5.50
Plastic Chemicals	50.00	83.34	37.50	57.22
Dyes	...	...	30.00	46.76
Drugs & Pharmaceuticals	32.14	32.13	30.77	31.01

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook, various issues covering 1948-1968.

Increases in numbers and assets of firms controlled by managing agencies took place only in three industries, namely, rubber, organic chemicals and dyes. In both organic chemicals and dyes there was no firm under the managing agency system, these industries being virtually nonexistent in 1948, and growing significantly only after the launching of the Five Year Plans. In dyes about half of total assets came under the control of managing agencies in 1968; by contrast in organic chemicals it was insignificant. In the rubber industry alone the percentage increase in number of firms controlled by managing agencies was quite high (27 percentage points) while in asset size, the percentage increase was less steep (14 percentage points) during 1948-1968.

In 7 of the 22 industries the percentage of assets of firms under the managing agencies remained virtually unchanged between 1948 and 1968, while in number the percentage of firms changed little in 4 industries only. Drugs and pharmaceuticals and synthetic textiles industries showed slight percentage changes in the role of managing agencies measured both in number and asset size. The firms under managing agencies in the majority of engineering industries (4 out of 6) showed little change in the percentage of assets while in number the change was over 20 percentage points during 1948-1968. In cotton textiles, the drop was about 20 points in assets where as in number the percentage had increased slightly.

Finally, in all the 5 "traditional" industries (i.e., industries which had been developed before India's independence in 1947), namely, cotton, jute, paper, cement, and sugar, firms under managing agencies, where the holds of managing agencies had been strongest, declined significantly both in industry shares of number of firms and asset size. With the exception of cotton textiles, the decrease was more than 10 percentage points in number, while in asset size the decrease was more than 5 points in all five industries; for cotton and sugar it was near 20 per cent. For the industries which were developed after 1948, namely the engineering and chemical groups, in 4 out of 6 engineering industries, and 3 out of 6 chemical industries the percentage of firms under the Managing Agency System dropped significantly.

Table 4-1 does not reveal the fact that most of the large managing agencies held a number of firms in the same industry, thus seriously undermining competition among them. In Table 4-2 we have computed the multi-firm holdings of a single managing agency in each industry during 1948-1968. Thus in 1948, 11 out of 22 industries had this multifirm control by large managing agencies while in 1968 the number rose to 19 or about 86 per cent of total industries covered. The maximum concentration of multi-firm holdings by large managing agents was in three traditional industries in India, namely

TABLE 4-2

MANAGING AGENCIES HOLDING MORE THAN ONE FIRM IN ONE INDUSTRY, 1948-1968

Industries	1948				1968			
	No. of Multi-Firm M.A.	No. of Firms Held by M.A.	P.C. of Firms Held by M.A.	P.C. of Assets Held by M.A.	No. of Multi-Firm M.A.	No. of Firms Held by M.A.	P.C. of Firms Held by M.A.	P.C. of Assets Held by M.A.
Cotton Textile	24	84	30.43	41.19	24	97	26.72	48.48
Woolen Textile	1	2	20.00	29.57	1	2	16.66	16.77
Synthetic Textile	1	2	28.57	41.77	2	5	45.45	66.86
Jute Textile	13	50	67.56	70.19	10	41	66.12	70.80
Paper	..	..	...	...	3	7	16.27	51.34
Cement	1	2	11.11	53.56	2	5	23.80	18.86
Sugar	8	30	30.92	39.92	9	32	26.22	27.28
Vegetable Oil	2	4	13.79	26.91	2	4	17.39	31.09
Glass	..	..	...	...	..	..	...	...
Rubber	..	..	...	...	1	2	11.11	0.59
Tools & Instruments	..	..	...	...	2	5	13.88	21.80
Industrial Machineries	1	2	11.10	33.34	2	4	11.00	21.27
Automobile & Ancillaries	1	2	12.50	20.18	5	12	29.26	28.04
Electrical Engineering	..	..	...	...	6	13	18.30	26.88
Mechanical Engineering	2	6	13.95	21.01	9	21	20.58	33.78
Metallurgical Industry	2	4	16.00	15.89	3	6	10.00	45.03
Alkalies & Allied Chem.	..	..	...	...	2	5	12.50	7.73
Fertilizer	..	..	...	...	..	..	...	...
Organic Chemicals	..	..	...	...	..	..	...	...
Plastic Chemicals	..	..	...	...	1	2	12.15	27.95
Dyes	..	..	...	...	1	2	20.00	32.37
Drugs & Pharmaceuticals	..	..	...	...	1	2	5.12	3.29

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook, various issues covering 1948-1968.

cotton, jute and sugar for both 1948 and 1968. In the cotton textile and sugar industries more than 30 per cent of total firms were held in 1948 by 24 and 8 managing agencies respectively, while in 1968 the percentage decreased to 25 per cent with virtually no change in the number of managing agents controlling these firms. But the percentage of assets held by these agencies in these two industries changed differently during 1948-1968. While in cotton textile industry it rose from 41.19 per cent in 1948 to 48.48 per cent in 1968, in sugar it fell from 39.92 per cent in 1948 to 27.28 per cent in 1968.

For the jute textile industry, the percentage both in number and assets controlled by the multi-firm managing agencies remained virtually unchanged during 1948-1968, about 70 per cent of total assets and 66 per cent of number of firms. There was a slight decrease in total number of managing agencies in this industry in the 1948-1968 period. In the other two "traditional" industries, paper and cement, the change was different. While in paper there was no multi-firm managing agency in 1948, there arose three such agencies in 1968 controlling 16.2 per cent of the number of firms with 51.34 per cent of total assets. In the cement industry only one managing agency with two firms controlled 53.56 per cent of total assets in 1948, while in 1968 two agencies with five firms

controlled 18.86 per cent of total assets--a fall of about 35 per cent in assets.

The engineering industries were relatively new and growing parts of the economy in India. Tools and instruments and electrical engineering industries had no multi-firm managing agency in 1948; in 1968 an average of 23 per cent of assets was found to be controlled by such managing agents. In automobile and ancillaries, mechanical engineering and metallurgical industries the percentage of number of firms and assets controlled by managing agencies increased significantly from 1948 to 1968. In industrial machinery the number of multi-firm agencies increased by one but the percentage of assets held fell sharply from 33.34 per cent to 21.27 per cent. For the chemical industries, none had a multi-firm managing agency in 1948, but in 1968, 4 out of the 6 industries were so controlled. Thus in 6 out of the 22 industries, the percentage share of assets held by multi-firm managing agencies rose significantly during 1948-1968; in 4 industries it fell off, with the share remaining constant in one industry only. The multi-firm control by managing agencies spread to 7 industries in 1968 while in 1948 they were nonexistent in these industries.

In order to examine the structural changes in firms controlled by managing agencies during 1948-1968, we have computed Table 4-3 to describe shifts in these managing agency firms.

TABLE 4-3

INTER-TEMPORAL CHANGES IN MANAGING AGENCY FIRMS IN 22 INDUSTRIES, 1948-1968

Industries	Firms which were under M.A. in 1948 but not in 1968 (still operating)		Firms which were not under M.A. in 1948 but under M.A. in 1968		Firms which changed M.A. during 1948-1968		New Firms (i.e. firms after 1948) under M.A. in 1968	
	No. of Firms	P.C. of Total M.A. Firms in 1948	No. of Firms	P.C. of Total M.A. Firms in 1968	No. of Firms	P.C. of Total M.A. Firms in 1968	No. of Firms	P.C. of Total New Firms in 1968
Cotton Textile	57	42.53	2	1.06	18	9.57	35	40.22
Woolen Textile	...	...	...	...	...	...	...	...
Synthetic Textile	...	...	...	...	...	...	3	75.00
Jute Textile	15	21.73	1	2.00	14	28.00	...	...
Paper	2	12.50	...	...	2	10.00	4	21.05
Cement	5	27.77	...	...	...	...	3	50.00
Sugar	14	17.72	1	1.47	8	11.76	10	40.00
Vegetable Oil	9	47.36	...	...	1	8.33	2	33.33
Glass	...	...	...	...	...	...	1	16.66
Rubber	...	...	...	...	1	14.28	7	77.07
Tools & Instruments	1	14.28	...	...	...	...	6	24.00
Industrial Machineries	3	25.00	...	...	...	...	4	22.22
Automobile & Ancillaries	1	8.33	...	...	...	...	8	32.00
Electrical Engineering	3	21.42	...	...	2	8.33	12	30.00
Mechanical Engineering	5	18.51	1	2.12	2	4.25	16	27.11

TABLE 4-3--Continued

Industries	Firms which were under M.A. in 1948 but not in 1968 (still operating)		Firms which were not under M.A. in 1948 but under M.A. in 1968		Firms which changed M.A. during 1948-1968		New Firms (i.e. firms after 1948) under M.A. in 1968	
	No. of Firms	P.C. of Total M.A. Firms in 1948	No. of Firms	P.C. of Total M.A. Firms in 1968	No. of Firms	P.C. of Total M.A. Firms in 1968	No. of Firms	P.C. of Total New Firms in 1968
Metallurgical Industry	3	15.78	...	...	1	3.12	17	48.57
Alkalies & Allied Chem.	4	28.57	...	...	1	4.76	11	47.82
Fertilizer	1	25.00	...	...	...	...	7	53.84
Organic Chemicals	...	...	...	...	1	33.32	2	14.28
Plastic Chemicals	...	...	...	...	...	...	3	25.00
Dyes	...	...	...	...	...	...	3	42.85
Drugs & Pharmaceuticals	2	22.22	...	...	...	...	3	27.27

Only in the cotton and vegetable oil industries were the governmental and other internal pressures successful in substantially lessening the Managing Agency control. In cotton textile 57 firms or 42.53 per cent of total firms controlled by managing agencies went out of the system, while in vegetable oil it was 9 firms or 47.36 per cent of total firms existing in 1948 that had abolished such control. In 6 industries like jute, cement, industrial machinery, electrical engineering, alkalies and allied chemicals, and fertilizers, decontrol policies met with moderate success as more than 20 per cent of managing agency firms terminated this kind of management by 1968. In 5 other industries like paper, sugar, tools and instruments, mechanical engineering and metallurgical industries, the success was much less pronounced as seen in the small percentage of firms going out of the Managing Agency System by 1968.

But to assume that the vigor and ability of the managing agencies had diminished significantly during 1948-1968 would be mistaken. As seen in the last two columns of Table 4-3, a considerable proportion of new firms (i.e., firms coming into existence after 1948) came under the control of managing agencies. This was largely a development for new firms, as the number of firms that existed without a managing agent in 1948 but had one in 1968 were insignificant. In 4 industries, the percentage of new firms under managing agency control were

50 per cent or over, while in 5 industries it was 40 per cent or over in 1968. In 9 industries the percentage stood at more than 20 per cent, while in 2 industries it was over 10 per cent in 1968. Thus in almost all industries a significant number of new firms came under the control of the Managing Agency System, with the exception of the cotton and jute textile industries. In synthetic textile and rubber industries the percentage of new firms under managing agencies were highest, being 75 and 77 per cent respectively in 1968. In cement, metallurgical, alkalies and fertilizer it was around 50 per cent of new firms. Thus the hold of the managing agencies shifted somewhat from old established firms to new firms, launched after 1948, and established initially financed, and managed by mostly old managing agencies.

The strength of the hold of the managing agents on the firms they controlled could be seen by the small number of firms where the managing agencies had changed hands. In each of 5 industries only one firm changed hands, and there was no change at all in 11 industries during these two decades. Only in cotton, jute, and sugar there was numerous changes in managing agencies, and this was due in part to the fact that old British Managing Agency Houses had left India in the aftermath of India's Independence.[11] The industries where the number of managing agency firms had decreased significantly were

typically old industries, and reflected the fact that old British Managing Agents had left India, the control of managing agency being terminated thereafter. It is apparent, therefore, that in most industries once a managing agency acquired the control of a firm, it was able to maintain it successfully throughout the period of our study (1948-1968).

In Table 4-4 we have listed the largest firms in 22 industries under the control of managing agencies for both 1948 and 1968. In 14 industries the largest firm belonged to a managing agency in 1948, while the number rose to 15 in 1968. In 4 industries all 8 of the largest firms were under managing agencies in 1948. This went down to 3 industries in 1968. In total, in 8 industries in 1948, 7 of the 8 largest firms were controlled by managing agencies; this declined to 6 industries in 1968. In the "traditional" Indian industries like cement and vegetable oil, all the largest 8 firms were controlled by managing agencies in 1948; in sugar and paper the largest 7 were so controlled. By 1968 the role of managing agencies had declined in jute, cement, vegetable oil and sugar. In paper and cotton textile 7 of the 8 largest firms were controlled by managing agencies in both 1948 and 1968.

Thus, as shown in Table 4-4, the role played by the managing agencies is of paramount importance because of their

TABLE 4-4

LARGEST FIRMS UNDER THE CONTROL OF MANAGING AGENCIES IN 22 INDIAN INDUSTRIES, 1948-1968

Industry	1948 Ranking of Largest 8 Firms	1968 Ranking of Largest 8 Firms
Cotton Textile	All 8 Firms	All 8 Firms
Woolen Textile	1 3 4 7 8	2 3 5 6 7
Synthetic Textile	1 2 3 4 5	All 8 Firms
Jute Textile	All 8 Firms	1 2 3 4 5 6 7
Paper	1 2 3 4 5 7 8	1 2 4 5 6 7 8
Cement	All 8 Firms	1 2 3 4 6 8
Sugar	1 2 3 5 6 7 8	1 2 3 5
Vegetable Oil	All 8 Firms	2 4 5 6 7
Glass	1 2 3 4 5 6	1 2
Rubber	4	3 4 5
Tools & Instruments	1 2 3 4 6 7 8	1 2 5 7
Industrial Machineries	2 3 5 6 7	1 3 4 5 7 8
Automobile & Ancillaries	1 2 3 4 5 6 7	1 2 3 5 6 7 8
Electrical Engineering	4 5 6 7 8	1 5 6 7
Mechanical Engineering	2 3 5 6 7	1 4 5 7 8
Metallurgical Industry	2 3 4 5 6 8	All 8 Firms
Alkalies & Allied Chem.	2 3 4 5 6 7	2 3 4 5 6 8
Fertilizers	1 2 3	4 5 6 7 8
Organic Chemicals	.....	.....
Plastic Chemicals	1 2	1 2 5
Dyes	.....	1 4 7
Drugs & Pharmaceuticals	2 3 6 8	3 4

Source: Basic data collected from Kothari's Economic Guide and Investment Handbook of India, various issues covering 1948-1968.

control of the largest firms in most industries. In every industry other than rubber, fertilizer and plastic chemicals the managing agencies held more than 4 of the 8 largest firms in 1948; in 1968 only in 4 industries did they hold less than 4 of the largest 8 firms. In 6 industries the number of largest firms belonging to managing agencies remained constant throughout this period. Only in glass, and drugs and pharmaceuticals did the number decrease significantly in 1968. In rubber fertilizer and dyes, the number of largest firms held by managing agencies rose considerably during 1948-1968.

Although there were many managing agencies, and of these most were one-firm family-held agencies, it was the large multi-firm managing agencies which played the dominant part in most industries. If we examine the frequency distribution of firms controlled by managing agencies, it is seen that a handful of large managing agencies actually dominate the industries in which they operate. In Table 4-5, we have divided firms controlled by managing agencies into 6 size-classes, size being determined by assets of firms in terms of rupees. The first thing that strikes us is the fact that the distribution of assets among firms under managing agencies is highly skewed. While the lowest size-class had only 0.39 per cent of total assets of all firms under managing agencies in 1948 with over 11 per cent of firms falling in this class, the largest size-class

TABLE 4-5

FREQUENCY DISTRIBUTION OF FIRMS UNDER THE CONTROL OF MANAGING AGENCIES ACCORDING TO ASSET SIZE, 1948-1968

Size-class[a]	1948			1968		
	No. of Firms under Managing Agencies	%	% of Assets	No. of Firms under Managing Agencies	%	% of Assets
Under Rs. 500,000	34	10.93	0.39	6	2.26	0.05
500,000 to 2,500,000	143	45.98	6.90	74	27.93	1.03
2,500,000 to 5,000,000	41	13.18	5.45	44	16.60	1.41
5,000,000 to 10,000,000	42	13.51	11.29	45	16.98	12.84
10,000,000 to 100,000,000	48	15.43	50.09	73	27.55	23.56
1000,000,000 and above	3	0.97	25.88	23	8.68	61.11

[a]To minimize the problem of price changes we have chosen a successively higher class-interval. For a methodological discussion of this problem, see I. Adelman, "A Stochastic Analysis of the Size Distribution of Firms," J. Am. Stat. Asso., Dec., 1958, pp. 898-99.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

with 1.26 per cent of total firms possessed 25.88 per cent of total assets in the same period. The largest percentage of firms belonged to second lowest size-class (45.43 per cent), but again had controlled only 6.90 per cent of total assets of managing agency firms. The largest two size-classes actually controlled more than 75 per cent of assets while consisting of only 16.72 per cent of total managing agency firms in 1948.

This pattern of skewed distribution is more pronounced when we compare it with that of 1968. The largest size-class in 1968 had more than doubled its share of assets controlling about a third of total assets of firms under managing agencies. In the lowest size-class, there was a sharp decrease in the percentage of firms, commanding an insignificant proportion of total assets. That the average firm sizes had increased during this period is quite evident in that in all four larger firm-sizes the percentage of firms belonging to these groups increased from 16.40 per cent to 36.26 per cent during 1948-1968, controlling about 85 per cent of total assets under managing agencies in 1968. It is thus clear that the operation of a large number of managing agencies did conceal the fact that there existed an extremely unequal distribution of assets of firms under these agencies and that it was only 96 large firms controlled by a few managing agencies that held more thak four-fifths of total assets of all firms under managing agencies operating in 22 Indian industries in 1968.

Limitation on Managing Agency Expansion

From the above discussion it is clear that the hold of managing agencies is quite tenuous in the engineering and chemical industries of India. These are the industries that developed after India's independence and particularly by the efforts made through Five-Year Economic Plans. Since the managing agencies were so strong in "traditional" Indian industries, one would expect that firms under managing agencies would be in a much better position to enter into these new industries as they could draw on the strength of the managing agent from other industries.

Here we have to understand the nature of government regulations faced by Indian industries. When the Managing Agency System first developed and flourished in the late nineteenth and early part of the twentieth centuries, that was the time for laissez faire economic growth throughout the world. Adam Smith's idea of unobstructed private enterprise from any government control was the theme which prevailed in Great Britain, and India being a colony of the British Empire, was subjected to the same kind of unfettered expansion of private enterprise. The Managing Agencies in India, being the vanguards of this capitalist development, promoted, financed and managed firms in those industries which promised them most--cotton, jute, sugar, cement and paper. Naturally, these were the industries where the hold of managing agencies became supreme.

When the political independence of India was attained in 1947, the first task of the new Government was to diversify the industrial base and lessen the hold of the Managing Agency System in Indian industries. The Industries (Development and Regulation) Act of 1951, following closely the Industrial Policy Resolution of 1948, provided the framework for the licensing and regulation of industrial investment in the country during the period of three Five-Year Plans (1951-1966) and thereafter. Among the principal objectives which the Industrial Policy Resolution listed, and which the Industries Act, 1951, was designed to implement, were:

(1) the development and regulation of industrial investments and production according to Plan priorities and targets;

(2) the prevention of concentration of ownership of industries; and

(3) balanced economic development of the different regions in the country, so as to reduce disparities in levels of development.[12]

Given these objectives, the policy of the Government was to limit the growth of firms under managing agencies in the newly developed industries. The licensing procedure served as a strong weapon in this policy. As shown in Table 4-6, 34 per cent of total applications for license submitted by 73 large industrial houses (all of which were managing agencies)

had been rejected by the Licensing Committee of the Ministry of Industrial Development. As a substantial part of these applications were for new undertakings, large managing agencies were hindered from expansion, particularly to newer industries like engineering and chemicals. The largest managing agencies were the most severely restricted, for about 38 per cent of applications made by 20 largest houses were rejected. (This latter group constituted about 58% of total applications made by 73 houses). And all this happened during 1956-1966, the period marked by rapid industrial growth in India.

TABLE 4-6

SHARE OF VARIOUS LICENSEE CATEGORIES IN THE NUMBER OF LICENSES ISSUED AND APPLICATIONS REJECTED, 1956-1966

Licensee Category	Total Number of Applications (1)	Number of Licenses Issued (2)	Number of Applic. Rejected (3)	(3) as % of (1)
73 Large Houses	3,444	2,255	1,189	34.54
of which				
20 Largest Houses	1,988	1,237	751	37.78
Large Independent Companies	509	417	92	18.08
Other Companies	322	264	58	18.01

Source: Report of the Industrial Licensing Policy Inquiry Commission, (Main Report), p. 48.

As compared to large managing agencies, large independent companies faired much better. The percentage of rejection of their applications was about half of the rejection rate faced

by large managing agencies. The rejection rate of companies other than these groups was about the same as that of larger independent firms. Thus the reason why firms under the control of managing agencies were much less prevalent in newer industries like engineering and chemicals was that the Government of India, through its licensing procedure, had created a barrier through which entry became much more difficult for large firms under the Managing Agency System.

The Demise of the Managing Agency System

The Managing Agency System served a unique and historic role in the industrialization process of India. It was the managing agencies who floated new firms, undertook the initial risk, raised the necessary capital, brought efficiency in production, and exercised firm and stable control over management. They were the providers, for all practical purposes, of all the finances required by industry--both initial and long-term--and working capital.[13] Above all, they supplied one basic and invaluable commodity--entrepreneurship--which was rare in the early stage of industrial growth for any country, particularly for an underdeveloped country like India.

With the passage of time it has been found that the System, due to its inherent conditions, has become a major stumbling block for speedy economic development. First, the firm and stable control which the Managing Agency System is supposed

to provide is, in fact, the perpetuation of family control. The System confers a birth right upon the managing agency family not merely to control the management of companies in the group, but also to participate actively and direct their routine management. The appointment of family members at levels superior to the professional tends to weaken efficiency and leads to an overlap of hierarchy in the top management of the managed companies.[14] Whatever might be the business acumen and entrepreneurial abilities of the founding fathers, there is no guarantee that their sons and grandsons will inherit these virtues and will apply them to the managed firms.

Second, the question of economies of management of companies under the same managing agency can arise only in the case of these managing agents which manage a large number of companies. But most managing agents manage only one or two companies each.[15] Even when the multi-firm managing agencies seek special expertise, the cost of this expertise, when obtained, almost invariably is charged to the managed companies, not to the managing agents. If a managing agent, for instance, manages 10 companies, the rate of commission paid by each of these 10 companies is not any lower because the same managing agent manages 9 other companies, too. The economies of management, if any, therefore accrue to the managing agent, not to the managed companies.

Third, the managing agents are entitled to a fixed commission when the managed company does not make any profit, and receive commissions on a sliding scale as the profits increase. This, in addition to the return they receive on capital invested in the managed company. For any other role, such as marketing, they are remunerated separately. Even where the contracts of the managing agents were terminated by the Government, they had devised new ways of retaining, if not augmenting, the earnings which they used to get as managing agents. It has been reported that the managing agency firms of various families have been appointed as "Secretary and Registrar," "Sales Organizers," and "Commercial Consultants."[16] If this trend continues, this would prove to be one more way of siphoning off the earnings of public companies into managing agencies.

Fourth, it is a part-time system of management. The managing agency as a company, and its members as individuals, are free to have other occupations and any number of other management jobs in various companies, even if these involve a conflict of interest.

Finally, the Managing Agency System constitutes the single most important source of economic concentration. As the Monopolies Inquiry Commission had pointed out,[17] and as our study indicates, a few managing agencies controlling a number of giant firms virtually dominate the industrial scene of India.

The interlocking of directorates had accentuated this process, and the interlocking of funds has become a necessary offshoot of managing agents' financial control over strong and weak firms.[18] Transference of money from the financially strong firms to the weaker ones often is the usual practice. With the financial collapse of the weaker firms, the stronger ones, which had been induced by a common managing agent to advance funds, receive a rude shock.[19]

As the development process gathered momentum in the early sixties, it was keenly felt that the Managing Agency System had become an anachronism and should give way gradually to management by professional people. To quote Mr. G. L. Mehta, ex-Ambassador of India to the United States and currently the Chairman of India Investment Center, "What India needs most today is the class of professional management which will bring modern management to the corporate world."[20] With the establishment of various management schools, the dearth of professional managers is no longer a fact of Indian corporate life. What is needed is the opening up of upper echelons for these people. The gradual divorce of ownership and control will also bring confidence and mass participation in India's stagnant capital market. If the capital market is to depend upon public support, the confidence has to be created among investors that the enterprises they invest in will be fairly managed.

With all the clamor against the Managing Agency System and with the publication of the Report of the Monopolies Inquiry Commission in 1965, it had become apparent that some drastic overhaul in the company management structure was necessary. Dr. D. R. Gadgil, the past Vice-Chairman of the Indian Planning Commission, voiced this concern by saying that it was obviously harmful to the public interest that the large group of companies formed and operated under managing agencies in the manner described, should possess great economic power. To him the forcible break-up of managing agency control over public companies was an obvious step.[21] Professor Hazari, doing research under the aegis of the Planning Commission, reported it as "an expensive, irrational and part-time system of management." With the sentiment high against the Managing Agency System, the Government of India announced in January 1965 the appointment of a five-man expert committee under the Chairmanship of Dr. I. G. Patal, "to inquire into and Report to the desirability of the continuance of Managing Agency System in major industries."[23] After receiving the Committee's report recommending abolition of the System, the law was promulgated for the phased abolition of the System, starting from circa 1970. Thus the days of the Managing Agency System in India are numbered. The System, though having served its historical purpose, is no longer useful for planned economic growth and social justice in India.

NOTES

[1]Government of India, Report of the Monopolies Inquiry Commission, Vol. I & II (New Delhi, 1966).

[2]From the very beginning the managing agencies were conglomerate in nature. To quote Michael Kidron: "From the start the lack of modern industry encouraged the agencies to seek self-sufficiency, each developing its own sources of raw materials, its own services, and a substantial market within its own operations." M. Kidron, Foreign Investments in India (London, 1965), pp. 6-7.

[3]A. Tripathi, Trade and Finance in the Bengal Presidency: 1793-1833, Ch. 1; see also Blair King, "The Origin of the Managing Agency System," Jour. Asian Studies, Nov. 1966, pp. 37-48.

[4]P. S. Lokanathan, Industrial Organization in India (London, 1935).

[5]A. F. Brimmer, "The Setting of Entrepreneurship in India," Quar. Jour. Econ., Nov., 1955, pp. 553-76; see also D. H. Buchanan, The Development of Capitalist Enterprise in India (New York, 1934), Ch. VIII.

[6]M. M. Mehta, Structure of Indian Industries (Bombay, 1955).

[7]J. N. Bhagwati and P. Desai, India: Planning for Industrialization (London, 1970), p. 23.

[8]R. S. Rungta, The Rise of Business Corporations in India, 1851-1900 (London, 1970).

[9]S. K. Basu, Managing Agency System: In Prospect and Retrospect (Calcutta, 1957).

[10]In 1960, the Indian Parliament appointed a committee to study the alternative forms of management.

[11]Government of India, Report of the Industrial Licensing Policy Inquiry Commission (New Delhi, 1969).

[12]Ninth Report of the Estimates Committee (1967-68), Indian Parliament, quoted in Bhagwati and Desai, op. cit., p. 250.

[13]P. S. Lokanathan, "Changing Structure of Industrial Finance," Eastern Economist, March 7, 1969, p. 472.

[14]R. K. Hazari, "The Managing Agency System: A Case for its Abolition," Economic Weekly, Annual number, Feb., 1964, pp. 315-22.

[15]Eastern Economist, Jan. 22, 1965, p. 158.

[16]Economic and Political Weekly, June 7, 1969, p. 928.

[17]Government of India, Monopolies Inquiry Commission's Report (New Delhi, 1966).

[18]A. K. Roy, Some Aspects of Economic Development in India (Calcutta, 1961).

[19]Alak Ghosh, Indian Economy (Calcutta, 1965), p. 275.

[20]G. L. Mehta, Eastern Economist, Jan. 22, 1965.

[21]D. R. Gadgil, Planning and Economic Policy in India (Bombay, 1961).

[22]Eastern Economist, Jan. 22, 1965, p. 157.

CHAPTER V

ROLE OF LARGE INDUSTRIAL HOUSES IN INDIAN INDUSTRIES

In India, concentration by large firms and multi-firm holdings by the managing agencies as discussed in Chapters 3 and 4 pose the problem of concentration in each individual industry. But like Japanese "Zaibatsu" groups, industrial houses in India are big conglomerates which control firms in diverse industries, mining, plantations, services and trade. In order to study the nature of this conglomerate problem, we have to move from industrial concentration ratios to general concentration, as Professor Rotwein has suggested in the case of Japan.[1] Both Dr. Hadley and Professor Yamamura had discussed the economic concentration in Japan in terms of Zaibatsu conglomerates and concentration faced in each individual industry.[2] Similarly in the case of India, the Monopolies Inquiry Commission had divided the problem into two parts--"industry-wise" concentration and "country-wise" concentration where the big industrial houses are engaged in all kinds of economic activities throughout the country.[3]

Professors Collins and Preston, Sylos-Labini, Boyle and McKenna, and others have examined this "general" or "absolute" concentration in the U.S. manufacturing industries in terms of the share held by 50, 100, and 200 largest firms, both conglomerate and non-conglomerate.[4] While in the U.S. industries the share of the largest two firms will be negligible, in Japan the largest two conglomerates (Zaibatsus) held more than 27 per cent of total capital in manufacturing industries. Two Indian Houses held over 17 per cent of net assets in principal industries in 1968.[5] That is why the outcry against so-called "monopoly capital" is so rampant today both in Japan and India.

In a manner similar to Pakistan's 22 families (until the recent upheaval in December, 1971) and Japan's Zaibatsu groups, India's major industries are dominated by 73 family-based large industrial houses. While all large industrial houses in India are managing agents, all managing agencies, or course, are not large industrial houses, and most managing agencies control one firm, engaged in one industry only. Large industrial houses, on the other hand, are managing agencies that spread across industry lines in India. With the abolition of the Managing Agency System already in process, many industrial houses no longer work as managing agents but maintain their hold either through managing directors or

through chairmen of the board of directors, or simply putting their family representatives in the board. For example, in 45 Birla concerns in 1968, 12 Birlas each acted either as chairman or members of boards of directors. In 11 concerns their relatives represented the Family and in only 6 concerns two Birlas became members of the board of directors.[6]

Nature of Large Industrial Houses in India

There is no clear definition of the concept "Industrial House" laid down by any statute. The term "House" has long been used to describe a mercantile firm, especially because in many countries business concerns were initially developed as family concerns. The names of important family concerns which played a prominent part in the industrial histories of different countries are well-known. These include Mellon and Rockefeller in the U.S.A., Krupp in Germany, Rothschilds in U.K. and France, and Zaibatsu families in Japan.

In India also, many industrial concerns developed as family concerns and some of the more successful families like Tata and Birla gradually built up a large number of industrial concerns under their auspices. The joint family tradition which, to some extent, continues to have significant influence in India even today, and other social factors have also helped in maintaining close connection among different branches

of business families and, therefore, among concerns which are developed and managed by an expanding family and their relations. The Managing Agency System significantly helped the maintenance of the hold of family groups over an increasing number of business concerns. With the opening up of new opportunities as offered by subsequent economic planning and the shutting off of external competition through import restriction, the large industrial houses have increased their control enormously through far-flung economic activities.

We can trace the concept of "Industrial House" in the Companies Act of 1956. Section 370 (1 B) of this act seeks to define what constitutes "same management". But this and related terms were meant to serve the rather restrictive purpose of deciding the propriety of inter-corporate investments and loans. Dr. R.K. Hazari defines a "corporate group" as consisting of units which are subject to the decision-making power of a common authority.[7] He describes the relationship as a series of concentric circles. The innermost circle is constituted by a hard core of bodies which are largely or wholly owned by and are under the sole control of the decision-making authority. Next, there is a circle formed by the majority-controlled companies in which one or more interests outside the group have a share in control, but the majority vote is retained with the group. These two constitute the "inner

circle" in which the group has fifty:fifty participation, minority participation or even a nominal participation, or it may merely look after the management of the concern. The "outer circle" may consist of companies in which the decision-making authority has a voice and material influence--but not the controlling voice.

The Monopolies Inquiry Commission was the first authoritative official body which attempted to define the concept of the business group and indicate the composition of the more important of such groups. It defined a business group to comprise of "all such concerns which are subject to the ultimate and decisive decision-making power of the controlling interest in the group--the group master."[8] The Commission took into account the substance of control and therefore the companies comprised by it in a business group included managing agency companies (or Secretaries and Treasurers), their managed companies, subsidiaries and companies under the same management as managing agency and managed companies, and such other companies over which the principal financial and/or management control is exercised by the individuals and companies of the business group, individually or collectively. The commission, however, had assumed that controlling interest depends upon majority ownership in equity, i.e., over 50 per cent.

The Industrial Licensing Policy Inquiry Committee (the Dutt Committee) had adopted the concept of "the substance of control" wielded by a Group or House (the terms were used interchangeably).[9] According to this Committee, the House should include those business concerns over which a common authority is held sway. These business entities, though separate for legal or taxation purposes, function in union as parts of a common organization under the overall guidance, direction and support of a closely-knit group of persons. While the day-to-day affairs of the concerns are independently carried on by those with whom the authority rests under proper legal sanction, the ultimate source regulating overall policies can be traced to a common authority. "There may be wide variations in the nature and extent of authority exercised, but there is definite evidence about the guidance, control and support from the common authority."[10]

But the Dutt Committee, however, did not accept the composition of the Houses as given by the Monopolies Inquiry Commission. It (Dutt) was not certain that the criterion of control over 50 per cent equity was an appropriate one to adopt. Rather, the Committee decided, among other things, on the following criteria for determining the composition of an Industrial House: (1) concerns admitted by the House through the replies received by the Committee from the apex

companies; (2) (a) concerns mentioned as forming part of the House in the brochures or other publications of the House, (b) concerns functioning as or managed by Managing Agents/ Secretaries and Treasurers which are wholly or substantially owned by the controlling authority in the House along with relatives, (c) compnaies deemed to be under the "same management" under Section 370 of the Companies Act, 1956; and (3) companies wherein not less than one-third "effective equity" can be clearly identified as House-interest.

Although the Dutt Committee did not agree with the composition of the Houses as defined by the Monopolies Inquiry Commission, the Committee in fact listed and discussed 73 industrial houses out of a total of 75 as originally given in the Monopolies Commission's Report, after finding errors in listing two Houses. For our discussion and analysis, we have taken 70 Houses out of Dutt Committee's list of 73 Houses, as 3 had no business in the 22 industries we have examined.[a] The complete list of these 70 Industrial Houses has been furnished in Appendix D where the ranking of Houses is given according to their asset size for both 1948 and 1968.

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[a]The 3 Houses which have been excluded are Scindia Steam Navigation, Swedish Match, and M.C. Tube Investment.

Changing Shares of Large Houses, 1948-1968

In Table 5-1 we have calculated the concentration ratios of the largest 4 and 8 firms held by the 70 largest industrial houses for the years 1948, 1958 and 1968. In 9 industries the shares of the largest 4 firms were over 50 per cent and in 5 industries they stood over 75 per cent. But in 1958 the 4-firm concentration ratios over 50 per cent came down to 7 industries and in 1968 they were further down to 5 industries, while concentration ratios over 75 per cent were down to 3 industries in 1958 and in only one industry in 1968. The ratios decreased in 11 of these industries and increased in 7 industries during 1948-1968; the decline was unbroken in 7 industries over the two decades while only in 2 industries the increase in concentration ratios was unbroken. In 4 industries the ratios had remained virtually unchanged during these two decades, with slight changes taking place in 1958.

In important Indian industries like cotton and sugar, the 4-firm concentration ratios held by large industrial houses changed very little from 1948-1968. In the jute textile industry the ratio jumped about 17 per cent in 1968 as compared to 1948 mainly due to the fact that the industrial houses involved has acquired the control of the British managing agencies who left India by that time. In the engineering group 4-firm ratios in tools, industrial machineries and automobiles

TABLE 5-1

4-FIRM AND 8-FIRM CONCENTRATION RATIOS
HELD BY LARGE INDUSTRIAL HOUSES
IN 22 INDIAN INDUSTRIES
1948-1968

Name of Industry	4-firm Ratios			8-firm Ratios		
	1948	1958	1968	1948	1958	1968
Cotton Textile	13.15	12.33	15.71	21.98	20.34	24.77
Woolen Textile	61.13	44.87	35.33	61.13	44.87	35.33
Synthetic Textile	86.03	75.90	72.38	98.56	97.59	98.88
Jute Textile	12.14	17.88	28.74	21.41	27.63	39.50
Paper	63.43	59.69	37.56	78.49	73.44	59.29
Cement	70.10	65.32	53.13	84.87	79.77	72.40
Sugar	17.57	12.32	16.18	26.35	19.09	22.66
Vegetable Oil	30.11	29.12	37.40	36.24	39.91	43.70
Glass	12.16	46.55	35.13	12.16	46.55	35.13
Rubber	5.78	12.14	14.79	5.78	12.14	14.79
Tools & Instruments	53.74	57.97	40.59	57.09	69.73	52.37
Industrial Machineries	44.89	42.73	37.06	51.02	54.87	51.63
Automobile & Ancillaries	84.22	70.74	55.05	89.37	79.16	65.92
Electrical Engineering	18.12	19.86	22.04	27.14	26.21	31.15
Mechanical Engineering	23.85	29.59	23.27	35.59	39.42	32.14
Metallurgical Industry	81.64	81.52	78.09	91.10	85.54	85.09
Alkalies & Allied Chem.	50.79	53.05	37.67	67.86	64.89	52.06
Fertilizer	92.65	86.78	21.37	92.65	86.78	22.38
Organic Chemicals	2.08	1.25	1.54	2.08	1.25	1.54
Plastic Chemicals	83.34	40.26	49.71	83.34	40.26	50.92
Dyes	...	18.71	59.65	...	18.71	59.65
Drugs & Pharmaceuticals	19.93	18.08	16.01	19.93	18.08	16.01

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

had declined significantly during 1948-1968, while in metallurgical and mechanical engineering the ratios remained practically unchanged in these years. In the chemical group, 4-firm ratios had decreased drastically during 1948-1968 in alkalies, fertilizers, and plastic chemicals, while remaining constant in drugs. In organic chemicals there was no concentration by large industrial houses. In dyes, there was no firm held by large industrial houses in 1948, but they had gained a foothold by 1958 and their shares increased substantially by 1968. In glass, the ratios had increased significantly from 1948 to 1958 and declined somewhat in 1968, registering a total increase of 23.97 per cent during 1948-1968.

The general pattern of changes in 8-firm concentration ratios held by large industrial houses was similar to that for 4-firm ratios. There was an unbroken decline in 8-firm ratios in 6 industries, and in 3 industries the ratios increased consistently for these twenty years. In cotton, sugar and plastic chemicals, the ratios dipped from 1948 to 1958 and increased in 1968, while in glass and tools the 8-firm ratios jumped sharply in 1958 and fell off again in 1968. In 5 industries both the 4-firm and 8-firm had remained the same during 1948-1968 as not more than 4 firms were held by large industrial houses in these industries. In fertilizer and plastic chemicals the two ratios had remained the same in

1948-1958, and then differed as more than 4 firms held by the large houses had joined during 1958-1968.

In Table 5-1 we have calculated the single firm holdings of the largest 4 and 8 industrial houses in each of the 22 industries, but in most of the "traditional" Indian industries like cotton, jute, paper, cement and sugar some industrial houses controlled more than one firm in the period covered by our study. When we add their asset shares and calcualte the multi-firm holdings of 4 and 8 largest industrial houses in these industries, as done in Table 5-2, we find that the concentration ratios had differed significantly from those of Table 5-1, although the concentration ratios held by the 4 largest houses in 1948 were nowhere as great as 40 per cent, except in the cement industry.

TABLE 5-2

PERCENTAGE OF ASSETS HELD BY THE LARGEST MULTI-FIRM HOUSES IN "TRADITIONAL" INDUSTRIES

	1948		1958		1968	
Industry	Largest 4 Houses	Largest 8 Houses	Largest 4 Houses	Largest 8 Houses	Largest 4 Houses	Largest 8 Houses
Cotton	19.64	26.66	27.43	35.18	29.11	36.50
Jute	35.98	45.67	36.18	59.02	46.72	62.91
Paper	36.02	36.02	56.28	56.28	51.34	51.34
Cement	74.42	74.42	75.47	75.47	69.53	69.53
Sugar	25.76	29.33	19.61	25.73	22.36	26.14

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

Among these 5 industries the ratios moved very little during 1948-1968. Only in sugar the ratios had declined by more than 6 percentage points between 1948-1958, and had increased again by 7 points in 1958-1968, with an over-all constancy during 1948-1968.

In cotton, jute and paper industries, the concentration ratios held by 4 houses had increased by about 12 per cent on the average in 1968 as compared to 1948. In cement, the ratio had decreased by less than 5 points while in sugar it increased by 1 point during this period. For the concentration ratios held by the 8 largest multi-firm houses the same trend was observed during 1948-1968 as was seen for the 4-house ratios in Table 5-2. The ratios had increased significantly in cotton, jute and paper while declining slightly for both cement and sugar. In the paper and cement industries, the 4-house and 8-house ratios had remained the same as there were not more than 4 multi-firm houses in these industries during 1948-1968.

When we examine the changes in asset shares of all 70 industrial houses in the 22 industries combined, as done in Table 5-3, we find that the shares of the largest 4 and 8 houses had shown little change in these two decades, registering only a 2 per cent decrease on the average from 1948 to 1968. For the remaining three groups the decrease was more than 5

TABLE 5-3

PERCENTAGE SHARES OF 70 INDUSTRIAL HOUSES
1948-1968

Industrial Houses	Percentage Share of Assets		
	1948	1958	1968
All 22 Industries			
Largest 4	24.25	29.73	23.24
Largest 8	31.29	36.75	28.81
Largest 20	45.63	61.76	39.34
Largest 50	59.74	71.73	49.91
Largest 70	61.74	77.89	52.81
18 Industries[a]			
Largest 4	24.83	30.65	24.26
Largest 8	32.04	37.89	30.08
Largest 20	46.72	63.57	41.06
Largest 50	61.13	73.61	51.15
Largest 70	63.21	78.69	52.04
5 "Traditional" Industries[b]			
Largest 4	17.27	19.77	21.53
Largest 8	21.24	30.36	29.34
Largest 20	41.09	45.89	46.66
Largest 50	55.88	61.76	62.37
Largest 70	58.20	64.80	65.06

[a]Glass, organic chemicals, dyes, and drugs & pharmaceuticals are excluded because of insignificant share held by large houses.

[b]Cotton, jute, paper, cement, and sugar are five "traditional" industries which were developed before India's independence in 1947.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

percentage points, but nowhere was it greater than 10 per cent. For the 1948-1958 decade, all concentration ratios for these groups had increased by more than 5 per cent. All declined during the 1958-1968 decade, the declines being greatest for the groups encompassing the largest 20, 50 and 70 houses. Thus concentration by large houses increased somewhat in 1948-1958, and it was only during 1958-1968 that the main structural change of declining concentration by large industrial houses took place.

The same trend was observed when 4 industries were excluded from the calculation due to virtual non-existence of large houses in these industries.[a] Again, we find that the concentration ratios for all groups rose during 1948-1958, and declined in 1958-1968, registering an overall pattern of little change for the largest 4, 8 and 20 houses and significant change for the totals of 50 and 70 houses. This general pattern, however, does not apply in the case of houses in the 5 "traditional" industries. Here we see that the percentage shares held by all groups increase moderately during 1948-1968. The main increase, as seen before, occurred between 1948 and 1958; the shares remained almost constant during

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[a]The industries excluded are glass, organic chemicals, dyes, and drugs and pharmaceuticals.

1958-1968. Thus control by large houses had increased in the slower growing traditional industries, but where growth was much faster, concentration by large houses had declined considerably during these two decades.

When we examine the tails of size distribution of assets of the largest 70 houses, as shown in Table 5-4, we find that the change in asset share between these groups was overall not very marked. The shares of the top 10 and 20 per cent of these largest 70 houses increased by less than 5 percentage points, while in the lower tail of asset distribution the shares of bottom 20 and 10 per cent of houses had remained virtually unchanged for this period. Inequality apparently increased significantly between 1953 and 1958, and declined again between 1958 and 1963. Thus the main structural changes in this regard occurred between 1953 and 1963, the period marked by India's official launching of the First Five Year Plan and the completion of the Second Five Year Plan. With the initial opportunities opened by economic planning, the largest industrial houses had expanded their production facilities and ventured into new industries much faster than their weaker competitors. The situation became stabilized and reversed somewhat only when the smaller houses caught up with the growth rate of giant ones during the Second Five Year Plan (1958-1963).

TABLE 5-4

ASSET DISTRIBUTIONS OF LARGE INDUSTRIAL HOUSES
1948-1968

Percentage of Houses	Year				
	1948	1953	1958	1963	1968
Top 10%	49.14	50.02	59.99	52.59	53.80
Top 20%	65.05	63.67	72.36	67.26	68.73
Bottom 20%	1.52	1.60	1.43	1.62	1.35
Bottom 10%	0.37	0.42	0.30	0.36	0.28
Gini Concentration Ratio	0.6062	0.5969	0.6602	0.6602	0.6335
Herfindahl Index	0.2911	0.2951	0.3892	0.3187	0.3392

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

When we plot the asset distributions for the 70 houses as Lorenz curves (Figure 1), the lines for 1948 and 1968 are too close to indicate any significant change in the relative size distribution between 1948 and 1968. The two curves show little change in relative positions with a slight increase in inequality in 1968 as compared to 1948. But for 1958, the Lorenz curve shows significantly greater inequality. Again, both the Gini coefficients and Herfindahl indexes reflect this position of little change in asset distribution in 1968 in comparison to 1948, with moderate increase in 1958.

Whatever might be the degree of inter-temporal change in asset shares among the industrial houses, the level of concentration held by the largest group is very high. The top

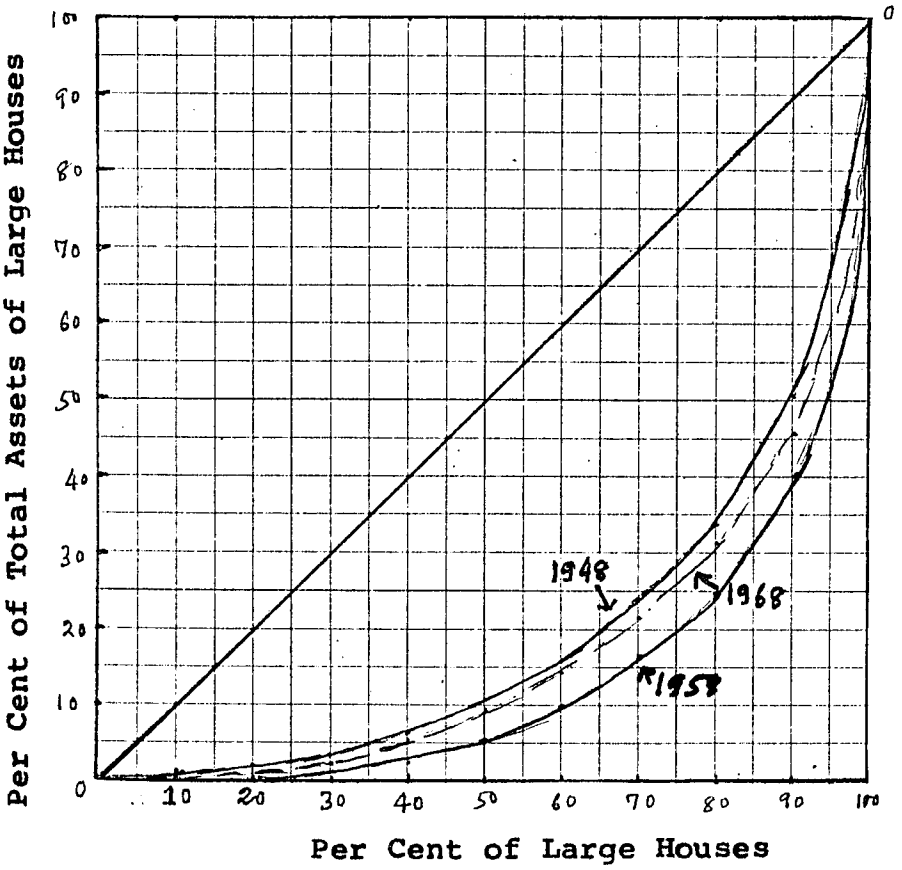

Figure 1.--Cumulative Distribution of the 70 Large Industrial Houses in India, 1948-1968.

10 per cent (7 houses) controlled about 50 per cent of total assets of the 70 large industrial houses in 1948, about 60 per cent in 1958, and about 54 per cent in 1968. In 1948 the top 30 per cent (21 houses) controlled over 75 per cent of total assets of the 70 large houses, and in 1968 the figure was more than 78 per cent. This extremely high skewed distribution was again reflected in the high values of Gini coefficients when the relative position of distribution was taken into account. Also, the Herfindahl index with its high values for both 1948, 1958 and 1968 indicates the wide dispersal of the industrial houses regarding asset size distribution. Thus it would be erroneous to suggest that since a house is included in the list of large industrial houses as tabulated by the Government, it is huge, necessarily diversified and cause for concern. Among these 70 houses only a minority at the top can be so characterized.

In Indian industries, the two largest industrial houses, Tata and Birla, have far outstripped other houses in size, control and financial interests, and so require special attention. We have computed their asset shares of the 22 industries for the 1948-1968 period as shown in Table 5-5. Here we find that these number one and two houses, taken jointly, had engaged in manufacturing activities in 17 of the 22 industries. The asset shares of these two giants were more than 50 per cent

TABLE 5-5

SHARE OF 2 LARGEST INDUSTRIAL HOUSES IN 22 INDIAN INDUSTRIES, 1948-1968

Name of Industry	Years				
	1948	1953	1958	1963	1968
Cotton Textile	12.92	13.41	16.86	17.60	20.10
Woolen Textile	29.57	23.69	19.59	14.54	16.77
Synthetic Textile	41.77	36.45	39.52	52.87	44.34
Jute Textile	3.61	5.36	7.01	12.67	17.81
Paper	26.42	20.83	31.25	23.03	19.78
Cement	0.14	0.14	1.38	3.72	3.51
Sugar	6.79	7.86	5.01	5.24	5.72
Vegetable Oil	26.91	41.47	27.38	31.65	31.09
Glass	...	...	...	...	...
Rubber	...	...	8.89	13.52	13.59
Tools & Instruments	10.45	16.25	6.89	8.31	5.59
Industrial Machineries	33.34	24.82	29.17	16.74	13.47
Automobile & Ancillaries	60.77	62.99	53.95	37.38	41.99
Electrical Engineering	11.15	8.13	19.17	19.96	17.44
Mechanical Engineering	10.15	6.76	19.66	18.02	17.45
Metallurgical Industry	57.86	47.37	47.55	46.26	44.60
Alkalies & Allied Chem.	19.80	16.27	13.93	10.57	11.95
Fertilizers	...	...	...	...	...
Organic Chemicals	...	...	...	...	...
Plastic Chemicals	53.54	50.32	19.83	13.21	7.18
Dyes	...	...	...	...	...
Drugs & Pharmaceuticals	...	...	...	...	...
% of Total Assets in all 22 Industries	18.38	17.27	21.16	21.63	17.37
% of Total Assets in 17 Industries[a]	19.15	18.32	22.04	23.06	18.64

[a]Excluding the industries where the Two Houses had no share during 1948-1968.

Source: Kothari's Economic Guide and Investors' Handbook of India, 1948-1968.

in metallurgical, automobile and plastic chemicals, and more than 30 per cent in industrial machinery, and synthetic textiles in 1948. But in 1958 they could hold this share of about 50 per cent in only one industry, namely automobiles, and none in 1968. The shares of 30 per cent were held in metallurgical, synthetic textiles and paper in 1958, and in the two along with automobiles and vegetable oils in 1968. In 8 industries the shares held by these two houses had declined considerably in 1968 as compared to 1948, while in 5 industries the share was more than 5 percentage points for the same period.

The most severe drop in the share of assets as held by Tatas and Birlas took place in metallurgical, automobiles, industrial machineries, plastic chemicals and woolen textiles during 1948-1968, with an average decrease of about 22 per cent. The bottom two lines of Table 5-5 summarize the change in overall share. Here it can be seen that the shares of these top two industrial houses were virtually the same in 1968 as they had been in 1948 when all 22 industries with some 4 per cent increase were taken into account. When we take the total assets of 17 industries where these two houses were engaged in production, their shares increased by 1 point only, with a slight decrease in 1968 as compared to 1948. In both these cases, the share had increased by about 4 per cent during 1953-1963, coming down again to original position in 1968.

In order to determine systematically the inter-temporal change in asset shares among these 70 industrial houses, we have employed the regression analysis for the entire two decades, divided equally in four time spans. The regression analysis was used originally in this context by Professors Friedman and Kuznets in their celebrated work on income from independent professional practice.[11] I. M. Grossack[12] and most recently David Mermelstein have used it to determine the relative changes in asset shares among large U. S. corporations.[13] The basic statistical measuring rod is the regression coefficient obtained by regressing given year shares on base year shares. A regression coefficient greater than unity means that firms that were above the mean tend, on average, to have an even larger share than they used to have, while those that were below the mean find themselves with still smaller shares than they had previously held. If the regression line coincides with the 45^{o} line, indicating equality of shares for the two years, neither the larger nor the smaller firms have benefited over the years being compared. Finally, when the regression coefficient is less than one, the relatively small firms have, on the average, gained in share while the relatively large firms have lost.

Equally important is the amount by which b, the regression coefficient, departs from unity. This is an indication

of the degree of readjustment that has taken place, that is, the degree of gain (or loss) in relative position of the typical large (or small) firm under study. Thus it is the trend of these values of b that we are interested in and not particularly in single values of b standing alone.[14]

In Table 5-6, we have fitted four regression equations for four equal time periods with each successive base year as the independent variable and later years as dependent variables. Inspection of this Table shows that in each successive time period the regression coefficient was much larger than unity, meaning thereby that the relative asset shares of larger houses had increased at the cost of smaller houses as the years had advanced. The highest increase in the values of b had taken

TABLE 5-6

REGRESSION ANALYSIS OF ASSET SHARE AMONG LARGE HOUSES IN INDIA

Time Period	Regression Coefficient (b) (n=70)	Standard Error of Coefficient	t-Values	R^2
1948-1953	1.2907	0.0227	6.5956[a]	0.9694
1953-1958	1.7959	0.0443	40.5395[a]	0.9596
1958-1963	1.7663	0.0352	50.1789[a]	0.9732
1963-1968	1.3017	0.0504	25.8273[a]	0.9073

[a]Significant at .01 per cent level.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

place between 1953 and 1963, and after reaching this plateau the value of b had fallen off somewhat in 1963-1968, still maintaining a higher value than unity. Thus the trend was unmistakenly clear that during these two decades of our study, the larger of the 70 largest Indian industrial houses had improved their relative position considerably while that of smaller of the 70 houses declined.

Size-Mobility Among Large Houses

To understand the changing nature of the industrial structure, it is important to examine the size-mobility of firms, for, as Boyle and McKenna have pointed out, the length of time which a dominant position has been held by a firm or firms may be as important as the level of concentration.[15] A decreasing rate of turnover would result from the development of more effective barriers to entry, or what Schumpeter called the development of "Trustified Capitalism."[16] Thus high turnover, according to Kaplan, would be considered as an indication of effective competition.[17] It would at least reflect the competition at the top, in this case competition among the large industrial houses in India.

In Table 5-7, we have calculated the rank correlation coefficients by five years, by decades, and for the entire period, 1948-1968. It is evident that there had been a continuous decline in correlation values from 1948 to 1963, as

compared by pairs of five years, but between 1963 and 1968, there was little change in ranks. The decline was much larger during 1948-1958 than during 1958-1968. But when we take the entire period into consideration, we find that there had been substantial changes in rank-orderings among these large industrial houses between 1948 and 1968. The average correlation value of 0.706 as seen for 1948-1968 was even lower than that of the United States, where the correlation value among the 100 largest firms during 1948-1964 was 0.872.[18]

TABLE 5-7

RANK CORRELATION COEFFICIENTS AMONG LARGE HOUSES, 1948-1968

Years	Correlation Values
1948-1953	0.9679
1953-1958	0.9217
1958-1963	0.8960
1963-1968	0.9781
1948-1958	0.8658
1958-1968	0.8882
1948-1968	0.7064

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

In Table 5-8 we have compiled data on entry, exit, and acquisition by 70 large industrial houses during 1948-1968. For the largest 4 and 8 industrial houses, launching of new

TABLE 5-8

ENTRY, EXIT AND ACQUISITION DATA FOR 70 INDUSTRIAL HOUSES, 1948-68

Large Houses in 1968	New Firms	Average	Disappearance of Firms	Average	Firms by Acquisition	Average
Largest 4	12	3.00	9	2.75	7	1.75
Largest 8	18	2.25	10	1.25	8	1.00
Largest 20	38	1.90	21	1.05	14	0.70
Largest 50	75	1.48	25	0.50	36	0.72
Largest 70	94	1.34	26	0.37	43	0.61

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues, covering 1948-1968.

firms after 1948 was very moderate in number--only 3 firms on the average for the larger 4 houses and little more than 2 firms on the average for the largest 8 houses in twenty years. The number was a bit higher on the average when the largest 20 houses were taken into account. The number of new firms came down to slightly over 1 on the average during 1948-1968. And with 50 largest houses, 36 new firms were added, each with more than 1 firm on the average. Between the largest 50 and 70 houses, again, 20 firms were added, 1 firm on the average for this widened group.

As regards the disappearance of firms, few firms actually went defunct during these two decades under the large industrial houses; 11 firms for the whole 70 houses ceased operation during this period. Most of the firms that disappeared went out of the managing agency system and so out of the control of these industrial houses. Mergers also played a very insignificant role in disappearance of firms; only 3 firms merged with other firms under the control of these 70 houses in these twenty years (1948-1968).

In Table 5-9, we have listed the number of survivors among these 70 industrial houses in 1968 when the initial ranking was made in 1948. Inspection of this Table would indicate that the top houses had maintained their supremacy almost intact; in groups comprised of largest 4 and 8 houses,

only 1 and 2 houses respectively had lost positions in asset ranking in 1958-1968, as compared to 1948. Higher turnover occurred among groups made of largest 20, 30, 40, and 50 houses; in first two groups, 6 houses each lost position in 1968, while the highest turnover took place in largest 40 houses where 10 or 24 per cent of houses had lost their ranks with the group of largest fifty houses coming next with a loss of 8 houses in 1968 from 1948.

TABLE 5-9

SURVIVORSHIP AMONG THE LARGEST 50 INDUSTRIAL HOUSES, 1953-1968

Initial Ranking in 1948	Ranking in years			
	1953	1958	1963	1968
Largest 4	4	3	3	3
Largest 8	8	6	6	6
Largest 20	19	15	15	14
Largest 30	29	27	23	24
Largest 40	38	35	32	30
Largest 50	49	45	42	42

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

One of the principal reasons for rank-order changes among the industrial houses is that many of the houses which inherited the control of British Managing Agencies during 1948-1957 had improved their positions substantially. Table 5-10 shows the list of Indian houses that acquired the assets of British Managing Agencies during 1947-1957 and improved

TABLE 5-10

INDIAN INDUSTRIAL HOUSES OWNING BRITISH MANAGING AGENCIES AFTER 1948

British Managing Agencies in 1948	Under Indian Houses in 1968	Ranking of Indian Houses	
		1948	1968
Kettlewell Bullen & Co.	Bangur	19	7
F.H. Heilgers & Co.	Bird	18	23
McKenzies Ltd.	Birla	2	2
Roberts, McLean & Co.	Birla	2	2
Allen Berry & Co.	Dalmia, R.K.	65	67
Duncan Brothers & Co.	Goenka	28	33
Braithwaith & Co. (India)	Jardine Henderson	10	42
Gladstone, Lyall & Co.	Jatia, G.D.	70	70
Bennett Coleman & Co.	Sahu Jain	12	10
Begg, Sutherland & Co.	Shapoorji Pallonji	53	48
British India Corp. Ltd.	Soorajmull Nagar.	29	11
McLeod & Co.	Soorajmull Nagar.	29	11
Forbes, Forbes, Campbell & Co.	Tata	1	1
Compton Greaves Ltd.	Thapar	20	8

Source: Government of India, Report of the Industrial Licensing Policy Inquiry Committee, Appendices, Vol. II.

their rankings in 1968. As seen in this Table, the House of Soorajmull Nagarmull had acquired three British Managing Agencies by 1958 which helped moving it from 29 in 1948 to 11 in 1968 in asset ranking. Similarly, Bangur, Thapar and Shapoorji Pallonji had each acquired one British Agency and improved their relative positions considerably between 1948 and 1968. Tata and Birla also had acquired one and two agencies respectively which helped to keep their positions as number one and two in 1948-1968. For Sahu Jain and R. K. Dalmia the acquisition had little effect in size ranking. But in the cases of Jardine Henderson, Goenka and Birla, it did not stem their decline in ranking in 1968 mainly because their assets in jute had shrunk and some firms in that industry had gone out of their control. For Jatia the acquisition had no effect in improving its position at the bottom of the list.

The second important reason for size-mobility among these large houses is the magnitude of change in the relative industry importance. As the traditional Indian industries had declined relatively and the engineering and chemical industries grew, those houses that expanded in the latter directions improved their ranking considerably in 1968 as compared to 1948. In Table 5-11, we have computed the frequency distribution of large houses according to major asset shares (i.e., more than 50 per cent) in principal industry groups. Forty-nine

of the houses had major asset shares in traditional industries in 1948, while in 1968 only 37 were so structured. In engineering industries, the number of houses grew from 14 to 22 and in chemicals, the number grew from 4 to 7. Again, the main change occurred during 1958-1968, the period marked by planned economic growth in Indian industries.

TABLE 5-11

DISTRIBUTION OF INDUSTRIAL HOUSES ACCORDING TO MAJOR SHARES,[a] BY INDUSTRY GROUPS, FOR SELECTED YEARS: 1948-1968

	Years		
Industry Group	1948	1958	1968
Traditional[b]	49	44	37
Engineering	14	16	22
Chemical	4	6	7
Others[c]	3	4	4
Total	70	70	70

[a] More than 50 per cent of total assets held by the House.

[b] Cotton, jute, paper, cement and sugar.

[c] Woolen and synthetic textiles, vegetable oil, glass and rubber.

It is thus seen that the largest industrial houses were strongly entrenched in Indian industries during the whole period of 1948-1968. The houses of Tata and Birla were the largest two in 1948 as well as in 1968. (In Appendix D the list of 70 houses are given with their rank order in 1948 and 1968). Among the largest 8 houses, 6 maintained their rank, with a

combined asset share of about 50 per cent of total 1968 assets of 70 houses. This concentration of asset share, along with the little turnover at the top over these two decades, would lead one to conclude that the largest Indian oligopolists had lost little ground during the last fifteen years of Indian economic planning, a period when one of the stated objectives was to lessen the inequality in all walks of economic life.

An International Comparison of Indian Industrial Houses with Japanese "Zaibatsus" and Western Conglomerates

A. Indian industrial houses and Japanese "Zaibatsus". The concentration of economic power in the hands of large industrial houses in India reminds us immediately of the economic power wielded by "Zaibatsus" in Japanese economy. Professor Joe Bain had drawn attention to the similarity of patterns of control by the two systems as reflected in their horizontal combination and vertical integration.[19] Even the origins of the two systems are similar. As pointed out by Professor Yasuzo Horie, the word "Ie" with its house business and house assets that served as the nucleus for latter-day large joint-stock companies in Japan.[20] The House of Mitsui, which was the core of Mitsui Zaibatsu, was founded by Mitsui Hachirobei Takatoshi who made his fortune in money exchange and drapery. Similar was the history of Mitsubishi and Sumitomo Zaibatsus.

To quote Professor Lockwood:

> The Sumitomo interests were almost entirely owned and directed by the single head of the family. The Mitsubishi combines were controlled by two Iwasaki Families, with common responsibility vested alternatively by custom in the eldest son of one family, then of the other. The eleven branches of the Mitsui family acted as a unit in accordance with formal household rules, last revised in 1900. They held 90 per cent of their wealth collectively. Policies were decided through a family council presided over by the head of the elder son's family.[21]

In India also, the houses of Tata and Birla were started by Jamshedji Tata and Ghanashyam Das Birla respectively who amassed fortunes through money exchange and trade. It was the joint family system which spawned the growth of industrial houses in India. A joint family in India is a large group of relatives who, either by marriage or by blood relationships, share various common interests and often live together in the same house, or in the same area. The economic and social unit is not the individual husband, wife and children as in the Western countries, but the whole family relationship. It was within this oriental tradition of family ties that the two systems grew up where the heads of families presided over their economic activities.

The capital generated by cotton spinning enterprises provided the principal source of expansion in both the systems. In Japan's economic structure established following the close of World War I, the Zaibatsu interests on the one hand and

cotton spinning capital on the other towered predominantly high, each controlling a large number of subsidiary industries and enterprises. In most phases, the Zaibatsu interests and spinning capital were interdependent. For instance, Mitsui and Co., and Mitsubishi Shoji exercised a powerful influence on spinning capital through the materials supplies and sales of their manufactured products.[22] In India most of the industrial houses were engaged mainly in cotton spinning industry before World War II. Thirty industrial houses had controlled more than one firm in cotton textiles before India's independence in 1947.[23]

The resurgence of the Zaibatsu system is an important event in Japanese economy today. After the U.S. Occupation Regime headed by General Douglas MacArthur during 1945-1949, the old Zaibatsus were disbanded and their holding companies like Mitsui Gomei, Mitsubishi Goshi and Sumitomo Honsha were dissolved by the SCAP (Supreme Commander of Allied Powers) directive. But former Zaibatsu subsidiaries, after the reorganization of Japanese economy, began to reorganize themselves as new large industrial groups based on horizontal tie-ups with their former partners in the second half of the 1948-1954 decade, as Dr. Hadley has pointed out.[24] The recent reorganization of Japan's industrial structure has made its start in the form of these industrial groups based on ex-Zaibatsu

interests making positive moves for inter-group combination and inviting outside enterprises to join hands. Today it is the Zaibatsu "groups" or "groupings" that pose the problem of economic concentration in post-war Japan.[25] With associations like Mitsui's "Nimokukai", Mitsubishi's "Kinyokai", and Sumitomo's "Hakusuikai", the Zaibatsu groups are working together in all stages of business operations, and " . . . the strongest cohesiveness and urge toward supremacy are manifested by the former "Zaibatsu" groups which have restored the system of mutual stock-holdings and interlocking directorships because of their belief that "blood is thicker than water."[26]

One of the chief sources of Zaibatsu power in Japan is the large commercial banks controlled by these groups. Professor Ryukicki Minobe has emphasized, in his discussion of Zaibatsus, the extremely wide financial power in the form of commercial bank credit that is used by the groups as the central leverage to extend control in all industries.[27] Similarly in India, some large industrial houses control commercial banks through which they lend capital to their managed companies and finance the inter-corporate holdings of stocks. In Table 5-12 we find that banks under principal Japanese "groups" held about 33 per cent of total paid-up capital of commercial banks in 1958 while banks under five Indian Houses held about 17

TABLE 5-12

PERCENTAGE SHARE OF BANKS HELD BY JAPANESE ZAIBATSUS AND INDIAN INDUSTRIAL HOUSES

Banks under Japanese "Groups"	Per cent of total paid-up capital (1958)	Banks under Indian Houses	Per cent of total paid-up capital (1962)
Mitsui	4.7	Birla	5.9
Mitsubishi	7.2	Sahu Jain	5.8
Sumitomo	6.8	Singhania	3.1
Fuji	7.5	Surajmull	1.5
Sanwa	7.1	Bangur	0.5
Total	33.3	Total	16.8

per cent of total paid-up capital in banking in 1962. The three Zaibatsu groups together held about 19 per cent of total paid-up capital, but the percentage share of Mitsui and Sumitomo groups individually were smaller than those other groups outside the three Zaibatsus. In India, on the other hand, the largest House, Tata, had no controlling share in any commercial bank and although these five houses generally belong to the top 10, only three had control over commercial banks large enough to be relatively comparable with banks held by Japanese "groups". Also, in India this comparison is of academic importance now as the banks controlled by industrial houses had been nationalized since 1970 while in Japan they are still a principal source of Zaibatsu power.[28]

In Table 5-13 we have compared the extent of integration among these Zaibatsus in 1959 with that of three largest industrial houses in 1964 for which comparable data are available.

TABLE 5-13

SELLING BY ZAIBATSUS AND INDIAN HOUSES
IN THEIR ASSOCIATED FIRMS

"Zaibatsu"-held firms (1)	Percentage of Firms listed as Principal Suppliers by Firms in Column (1) (2)
Japan, 1959	
Mitsui	46
Mitsubishi	51
Sumitomo	60
Indian Houses, 1964	
Tata	74
Birla	82
Martin Burn	91

Source: E. Rotwein, "Economic Concentration and Monopoly in Japan," Jour. Pol. Econ., June, 1964, p. 267, and Report of the Monopolies Inquiry Commission (India), p. 191.

Here we find that both the controlling groups in these two countries have considerable holds on the firms associated with them. In Japan in 1959 the largest two Zaibatsus accounted for half of the total supplies sold to the firms associated with them, while for the third one it was about two-thirds. For India the corresponding figures are considerably higher than that of Japan. The first two houses supplied about four-fifths of the total, while for the third one it was almost total in 1964.

But the holds of Zaibatsu groups are much more pervasive in Japanese industries than that of the largest Houses in Indian industries. In 1968 Mitsui group held 13.3 per cent of the total capital in Japanese manufacturing industries, Mitsubishi, 14.3 per cent and Sumitomo, 13 per cent respectively with a grand total of about 40 per cent.[29] For the Indian counterpart in 1968, Tata held 9.1 per cent of total paid-up capital (and reserves) in 22 major manufacturing industries, Birla 8.2 per cent and Martin Burn 3.5 per cent, totalling about 21 per cent--about half of what was held by the Zaibatsus.[30]

Unfortunately, we do not possess data on detailed industry-wide breakdown of Zaibatsu groups. But in Table 5-14 we have shown the comparative changes in the holdings of these two groups in two broad industry classifications. Due to the nature of these aggregate data it is the direction of change which is more revealing than the figures as such. Thus

TABLE 5-14

PERCENTAGE CHANGE IN ZAIBATSU CAPITAL AND ASSETS OF INDIAN HOUSES IN TWO INDUSTRY GROUPS

	Industry Groups					Industry Groups			
	Heavy Engineering & Chemicals		Textile & Paper			Heavy Engineering & Chemicals		Textile & Paper	
Zaibatsus	1945	1960	1945	1960	Indian Houses	1948	1963	1948	1963
Mitsui	74.1	42.9	5.5	14.7	Tata	68.5	73.3	10.7	7.2
Mitsubishi	75.1	59.9	0.5	5.1	Birla	14.6	20.6	38.2	36.4
Sumitomo	87.7	70.0	5.9	2.0	Singhania	24.5	24.1	34.5	37.9

Source: The Oriental Economist, February, 1961, and Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

between 1945 and 1960, the holdings of the Zaibatsu groups had substantiall decreased in heavy engineering and chemical industries while in textiles and paper--the power house of the Zaibatsus--they had increased considerably for Mitsui and Mitsubishi, and declined in the case of Sumitomo. Today the Zaibatsus are moving more toward service industries and trades.[31] But for the Indian houses the trend toward heavy engineering and chemicals were already evident during 1948-1963. For both Tata and Birla houses the percentage of capital (and reserves) had increased in heavy engineering and chemicals, and declined in textiles and paper, while for Singhania, the third most diversified house, the change was negligible for the period covered.

With the phenomenal growth of the Japanese economy in the last decade (1959-1969), the growth of the Zaibatsu groups was very impressive. As shown in Table 5-15, Mitsui group increased their capital by about three times, Mistubishi about four times, and Sumitomo about five times during this period. But although the Indian economy grew very modestly as compared to Japan for about the same period (1958-1969), the three largest industrial houses had fared well as comapred to Zaibatsu groups. All these houses had increased their capital (and reserves) by more than two-fold. Birla's performance in this regard was close to Mitsui's, while the Houses

TABLE 5-15

GROWTH RATES AMONG JAPANESE ZAIBATSUS AND THREE INDIAN HOUSES

	Japan (paid-up capital in ¥ millions)					India (paid-up capital in Rs. millions)			
	1959 (A)	1964 (B)	1969 (C)	(C/A) (fold)		1958 (A)	1963 (B)	1968 (C)	(C/A) (fold)
Mitsui	585	1,347	1,740	2.97	Tata	712	1,207	1,708	2.39
Mitsubishi	939	3,269	3,989	4.24	Birla	581	1,151	1,604	2.76
Sumitomo	500	1,502	2,449	4.90	Martin Burn	302	510	673	2.23

Source: Oriental Economist, June, 1970, p. 10, and Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1958-1968.

of Tata and Martin Burn lagged well behind in this impressive growth of capital assets.

Today the influence of Japanese Zaibatsus are ever-increasing, and it is "Japan, Inc.--the Total Conglomerate" where the government, organized labor and oligopoly capital have joined forces for the fastest economic growth in the world.[32] In India, on the other hand, the industrial houses are on the defensive in the face of the recent onslaught made by the government of India to curb their influences. With the launching of new industrial policy where new licenses for the expansion of production process are denied to these houses, and the enactment of Monopolies and Restrictive Trade Practices Act to review their role constantly, the influences of India's industrial houses are likely to wane in the future.[33] Thus the big conglomerates in India are threatened today in the expansion of their relative sizes and economic activities, while in Japan they are climbing to new heights and reaching the far corners of the world through their trading houses.[34]

B. Indian Industrial Houses and the U.S. Conglomerates. Since all the Indian industrial houses are conglomerate in nature, it is proper that we make a comparison between them and the U.S. conglomerates--the citadel of the current conglomerate movement. While in India, the industrial houses

from their early inception as managing agencies worked as conglomerates, it is comparatively a recent phenomenon in the U.S. economy. Professor Ralph Nelson has noted that in the United States there are three main merger movements: first at the turn of this century, second during the twenties, and third since the middle of the fifties which is still continuing.[35] It is the third one which is conglomerate in nature.

There are some fundamental differences between the conglomerate activities of the two countries. To start with, it is very rare in the United States for a conglomerate to operate more than one firm in an industry. In India, as we have seen before, a large number of industrial houses control more than one firm in one individual industry, besides controlling firms in different manufacturing and nonmanufacturing activities. Then in the United States, conglomerates expand into different industries mainly by acquiring firms in those industries. In India, on the other hand, the industrial houses spread out to different industries by establishing new firms under their control. In India it is entrance de novo, instead of entrance via merger as in the case of the United States. As seen in Table 5-8, mergers played a very minor role in the growth of Indian houses. It is mainly through internal growth that the large houses have expanded. In the United States merger is the principal instrument of growth of

the conglomerate firms. As shown in Table 5-16, it is the conglomerate merger rather than horizontal or vertical one that is taking place in the United States. Although the largest kind of conglomerate merger has been the market extension type, it is the "pure" (i.e., completely unrelated) conglomerate merger that has increased markedly from 3 in 1948-53 to 175 in 1964-69. In India no such movement has taken place in the history of her economy.

TABLE 5-16

NUMBER AND KINDS OF MERGERS IN THE U.S. INDUSTRIES DURING 1948-53 AND 1964-69

	1948-53	%	1964-69	%
Horizontal Merger	18	31.0	79	9.4
Vertical Merger	6	10.3	87	10.2
Conglomerate Merger				
Product Extension	4	6.9	87	10.2
Market Extension	27	46.6	427	49.9
"Pure" Conglomerate	3	5.2	175	20.3
Total	58	100.0	855	100.0

Source: Economic Concentration, Hearings before the Senate Subcommittee on Antitrust and Monopoly, Part 2 (1956), p. 516, and Federal Trade Commission, Current Trends in Merger Activity, 1969, p. 19.

Why in India are mergers so few and far between? We can find two reasons for that. First, most of the firms in major industries are already under the control of one-firm managing agencies or conglomerate industrial houses. Since by law there can be one managing agent in one company, a

merger will only change the managing agent without any change in his accrued commissions, etc. In most cases a change in managing agencies does not induce any interest either on the part of majority shareholders or on the part of the managing agent of the potentially acquired firm. Second, most of the mergers in the United States are consummated through the exchange of stock between the acquiring and the acquired companies. But in India the stock market has lain dormant for a long time, and is much less sensitive to price/earning ratios and other factors. The stockholders generally rely on the reputation of the managing agency, particularly if controlled by large industrial houses. That is why the takeover is rarely of the whole share capital, but only the stockholding of the controlling interest.[36]

Regarding the motives of conglomerate activities, the economic theory is, unfortunately, far from complete. Nevertheless, several hypotheses have been advanced in economic literature which merit consideration. Professor Henry Manne has suggested that, in an economy characterized by markets of small numbers and by the separation of ownership and control in the large corporation, the corporate take-over may yield the advantages of "a lessening of wasteful bankruptcy proceedings, more efficient management of corporations, the protection afforded non-controlling investors, increased mobility of

capital, and generally a more efficient allocation of resources."[37] Since a firm would presumably be more likely to be aware of and capable of rectifying managerial inefficiencies in other firms engaged in the production of similar, rather than dissimilar, products, Manne's hypothesis would seem to be more relevant to horizontal than conglomerate mergers, as Professor Felton has pointed out.[38] Besides, even though the new management enhances the efficiency of operation, this fact alone will not induce the management to share such efficiency gains with customers.

Professor Dennis Mueller has advanced the theory that conglomerate firms are growth maximizers rather than profit maximizers.[39] Since most of the large United States corporations are managed by professional managers, the compensation of management is found to be more closely correlated with the size of the firm than the profit rate of the firm. In India this motive is also prevalent among large industrial houses. Since they have accrued all kinds of commissions from the firms under their control, the prospect of any further profit is rather limited. It is much more advantageous to establish new firms in the same or different industries and reap the benefits of new commissions to be earned from them. Thus, in both cases maximization of growth, either external or internal, becomes a strong economic motive, beside prestige and other psychic satisfactions from sheer size.

Professor Michael Gort has proposed an economic disturbance theory of merger whereby wide variation in earning expectations may well lead a potential acquiring firm to value the assets of a potential acquired firm more highly than do the present owners. "There is a wide variety of economic shocks that alter the structure of expectation, but the most common are rapid changes in technology and movements of security prices."[40] Thus Gort's theory comes close to the empirical observation made by Professors Nelson and Weston that merger activity increases with the rising stock prices and rapid economic growth.[41] This theory sounds more promising as we have witnessed the abatement of conglomerate mergers during the recent economic recession of 1969-70. For India, we have no way of testing the theory as stock prices have moved very little for the last twenty years.

Whatever might be the reason for conglomerate growth, it is the most prevailing phenomenon in both the United States and India. In the United States, the "over-all" concentration due to the recent spate of conglomerate mergers has increased significantly. The largest 200 corporations held 61.9 per cent of total corporate manufacturing assets in 1969 against 47.2 per cent in 1947. Since there are nearly 200,000 manufacturing companies in the United States, more than 60 per cent are controlled by 1/10 of 1 per cent of all manufacturing companies.[42]

In India, the role of large industrial houses is much more pervasive. As shown in Table 5-3, 70 houses controlled more than 52 per cent of total manufacturing assets in twenty two major industries.

This raises the question whether conglomerates are beneficial or detrimental to the economic life of a country. Here, like most economic questions, there are a variety of conflicting viewpoints. Economists like Carl Kaysen,[43] Samuel Reid,[44] John Blair,[45] and Willard Mueller[46] maintain that the conglomerate merger has increased the concentration of economic power which is per se bad and perverse. Professor Corwin Edwards, the most outspoken critic of the conglomerate movement, points out the advantages of large conglomerate firms merely from the dispersion of their resources. These advantages, moreover, confer power over undiversified rivals which is inimical to effective competition. Edwards identifies those advantages as "(a) subsidization; (b) reciprocity; (c) full-line selling; and (d) the forebearness that prevails among large comglomerates."[47]

There are others who do not think that conglomerateness is all that bad, and in fact, is doing a positive service to the economy. Professor Robert Bork of Yale University maintains that a "conglomerate acquisition is not a way of creating conglomerate power," and that "the acquiring firm's choice of

one firm in the industry rather than another as a merger partner must be dictated by considerations of efficiency potential."[48] J. Fred Weston has argued that a good deal of merger activity has been associated with the increased technological dynamism of the United States economy and that mergers which reduce income variance and institute programs of financial planning and control can "make some significant contributions to the economy."[49] Supporting the same view with his empirical observations, Professor Burstein notes that conglomerates have shown no ability either to expand market share of acquired companies or to restrict entry into "acquired" areas.[50] Nor have they gained strength in their original power bases. As examples, he cites the plight of large conglomerates like R.C.A. who went broke against I.B.M., Burroughs, or Univac in the computer business, Litton who failed miserably against I.B.M. and Xerox in the photo-copy business, and the general failures like L.T.V. and Great Western.

Finally, an important distinction has to be remembered when we compare the United States conglomerates with those of India or Japan. The move for conglomerateness in the United States is taken to represent the offensive of newly-rising capitalists against the group of established big businesses.[51] In India, as in Japan, the large industrial houses or Zaibatsus have spearheaded the conglomerate movement and are still holding

the reins. The newcomers outside this charmed circle have made little headway in gaining the initiative of this movement.

NOTES

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CHAPTER VI

CONCENTRATION AND GROWTH OF MAJOR INDIAN INDUSTRIES, 1948-1968

Like many underdeveloped countries in recent decades, economic growth has become the prime concern of the Indian economy. When the First Five Year Plan was formulated in 1951, the main objectives were to increase national income and create jobs to the fullest extent possible. It was decided that in order to industrialize the economy from its agricultural base, the main thrust would come from the development of its already existing industries, and the faster growth of industries like engineering and chemicals from their rudimentary stages. Thus the development of industries, both of capital and consumer goods, became the main economic goal of India since her independence in 1947.

Planning and Economic Growth of India

Since we have mentioned the role of planning in the economic development of India, it is proper to discuss briefly the impact of various Five Year Plans on the growth of the

Indian economy. The rate of economic growth during the last fifty years of British rule was one per cent per annum on the average.[1] Thus the economic situation of India faced on the eve of her political independence was a bleak one. She had inherited from the British a war economy that was financed largely through inflation. Agriculture was primitive and even the modest industry that existed before required large-scale replacement and renewal of machinery. The rate of increase in national income was neutralized by the rate of growth of India's population.

The Partition of India in 1947 reinforced some of these problems. There was an influx of millions of refugees and conflict with Pakistan over Kashmir. The country was also faced with a serious shortage of foodgrains. From an economy that had a surplus in foodgrains and agricultural raw materials like jute and cotton, India became a deficit nation overnight because of the Partition. Superimposed were the teething troubles of a newly independent country. Above all, there was a revolution of rising economic expectations on the part of the people directly as a result of independence.

The formulation of economic planning became the logical step toward the accelerated economic growth of India with the resolve of the government to play a leading role in the development efforts of the country. Accordingly, the Planning

Commission was set up in April, 1951 and the First Five Year Plan was launched with the prime objective of increasing national income by 11 per cent over five years (1951-56). An outlay of 25 billion rupees was allotted to the public sector and 16 billion rupees of investment was planned for the private sector. In percentage terms the annual rate of investment was to rise from 5 to 7 per cent of the national income by the end of the First Plan.

The long-term objective of the First Five Year Plan was to initiate the process of planned development by making a small beginning in the creation of economic and social overhead capital. This objective of the First Plan was fulfilled to a great extent. National income in constant dollars went up by 18.4 per cent over the period. With favorable monsoons during this period, agricultural production increased by 22 per cent. Industrial production registered a rise of 39 per cent. Intermediate and consumer goods output went up by 34 per cent each. The largest increase, however, occurred in the capital goods sector where the output rose by 70 per cent.[2] The explanation of the abnormal rise in the output of capital goods was that the country started with a very small base initially.

The real plunge into development was taken with the launching of the Second Five Year Plan (1956-1961). The Plan envisaged a growth rate of national income by 5 per cent per

annum. The public sector outlay was to be 48 billion rupees and investment in the private sector was estimated at 24 billion rupees. The rate of investment of the national income was to increase from 7 per cent in the first year of the Plan to 11 per cent by the end of the Second Plan.

The performance of the Second Plan was quite impressive. The national income rose by 20 per cent at constant prices. Agricultural production also increased by 20 per cent. The highest rise was recorded by industrial production which went up by 41 per cent. The rate of annual investment rose from about 8 per cent at the beginning to about 11 per cent at the conclusion of the Second Plan.[3]

It was during the Third Five Year Plan (1961-1966) that the economy went through a series of setbacks. The Third Plan, which commenced in April, 1961, provided for a public sector outlay of 75 billion rupees and a private sector investment of 41 billion rupees. The Plan, however, did not succeed in achieving these objectives. The country faced the border clash with China in 1962, and the conflict with Pakistan in 1965. This caused a large increase in defense expenditure, rising from about 2.5 billion rupees per year in 1961 to about 10 billion rupees in 1966-67.[4] This meant a great cut in public and private investment in all sectors of the national economy. Along with that came a severe drought in 1966, which

continued into 1967. It brought a sharp fall of about 18 per cent in agricultural production, the output of foodgrains falling from a peak of 89 million metric tons in 1965 to a low figure of 72 million tons in 1966. Agricultural exports, which are the mainstay of India's balance of payments, declined by 800 million rupees in the same period.[5]

As a result of all these difficulties the growth in national income during the Third Plan period fluctuated from year to year. At 1948-49 prices, national income increased by 2.5 per cent in the first year but declined to 1.7 per cent in the second. It moved up again to 4.9 per cent in the third year. The peak of 7.6 per cent of annual growth was reached in the fourth year. In the last year of the Third Plan (1966) there was the setback due to unprecedented drought.

The recession that set in during 1966-68 following the aftermath of drought forced the postponement of the launching of the Fourth Five Year Plan in 1966. In order to maintain the continuity of planning, annual plans were formulated for 1966-67, 1967-68, and 1968-69. In the middle of 1969 the Fourth Five Year Plan was launched. With favorable monsoons and success in the "Green Revolution", agricultural production had surpassed 100 million metric tons mark at the end of 1969, and by 1970 the economy at last came out of the doldrums of recession. There is, thus, a great hope that the performance

of the Fourth Plan would be as good as the Second Plan years covering 1956-61.

In spite of the difficulties the economy encountered, the achievements during the last fifteen years of economic planning (1951-66) nonetheless are remarkable. In Table 6-1 we have presented the growth rate of national income during the three plans which shows that, at constant (1948-1949) prices national income grew at an annual rate of 3.5 per cent during the First Plan, 4.0 per cent during the Second Plan, and 2.9 per cent during the Third Plan. If we exclude the last year of the Third Plan and consider only the first four years, the growth rate for the Third Plan turned out to be 4.2 per annum at constant prices.[6] For the rather poor performance of the per capita income, we have to remember that the growth of population has cut into the growth rate of income. Since 1951, India's population has risen by nearly 134 million, the annual compound growth rate during 1950-2 to 1963-5 being 2.1 per cent.[7]

Investment in both public and private sectors has increased enormously during this period. Public sector investment has risen from 44 billion rupees in 1951 to over 115 billion rupees in 1966. In the private sector, investment has gone up from 7.5 billion rupees in 1951 to 90 billion rupees in 1966. The paid-up capital of companies has risen from over 7 billion rupees

in 1951 to over 15 billion rupees in 1964.[8] In Table 6-2, we have shown the increase in the index of industrial production which went up from 73 in 1951 to over 190 in 1966. The index of engineering products increased by about five times during this period.

TABLE 6-1

ANNUAL GROWTH RATES OF NATIONAL INCOME
ABSOLUTE AND PER CAPITA
BY EACH PLAN

	Net National Product	Per Capita Net National Product
First Plan (1951-56)	3.5	1.6
Second Plan (1956-61)	4.0	1.8
Third Plan (1961-66)	2.9	0.4

Source: Economic Survey, 1967-68, p. A-4.

TABLE 6-2

INDEX OF INDUSTRIAL PRODUCTION IN INDIA, 1951-66
(base: 1956 = 100)

	1951	1955	1960	1963	1966
Engineering	67.0	87.7	170.0	193.3	302.9
General Index (all industries)	73.5	91.8	130.1	165.8	190.9

Source: Eastern Economist, April 14, 1967, p. 737.

However, there are many areas of disquiet in the Indian economy. There has been a shortfall in the domestic rate of saving which had been in the vicinity of 10 per cent and did not show any increase. The gap between this saving rate and

the investment rate of 14 per cent in 1966 had been bridged by foreign aid, which in turn increased foreign debt enormously. Per capita income in India is still among the lowest in the world. Vast millions still live below the "bread line". Unemployment has increased by several millions.

During this period of economic planning, the occupational structure of the economy changed very little. As seen in Table 6-3, the percentage of population engaged in agriculture increased from 70.6 per cent in 1951 to about 73 per cent in 1961. In manufacturing industries the increase was negligible. The percentage of population employed in the tertiary sector actually decreased over this decade. Thus the occupational structure has, by and large, remained unchanged despite the growth and industrialization India achieved in this period.

Research and development activities in Indian industries are few and far between, and has changed little during this era of planning. According to the survey conducted by Professor Ashok Kapoor among the Indian manufacturing companies, less than 5 per cent of the respondents claimed to be engaged in any development activity while not even 2 per cent were engaged in research.[9] Large Indian companies are only slightly more R & D inclined than "average" Indian companies. The smaller size and protective nature of the markets are cited as reasons for this poor performance. Indian companies are

almost wholly dependent on their foreign collaborators for research and development efforts.

TABLE 6-3

PERCENTAGE DISTRIBUTION OF ACTIVE POPULATION BY SECTORS OF EMPLOYMENT IN INDIA, 1951-61

	Year	
	1951	1961
Total Active Population (in thousands)	101,775	188,676
Agriculture	70.6%	72.9%
Mining & Quarrying	0.5	0.5
Manufacturing	9.0	9.5
Construction	1.1	1.1
Electricity, Gas, Water & Sanitary Services	0.5	0.3
Commerce, Banking, etc.	5.8	4.1
Transport & Communication	1.9	1.6
Services	10.6	10.0
Total	100.0	100.0

Source: Population of Less Developed Countries, O.E.C.D., Aug., 1967, Table 3.

Growth Rates of Major Indian Industries, 1948-1968

Against the background of impressive overall increases in industrial production during the fifteen years of economic planning, there was considerable variation in the growth rates among the 22 industries covered in this study. In Table 6-4, we have computed the arithmetic average growth rates of 22 industries for four sub-periods, and also for 1948-68. In most of these industries the growth rate of assets was quite impressive. The rate was more than 10 per cent per year during 1948-1953 in 6 industries, 14 industries exceeded 10%

TABLE 6-4

ARITHMETIC AVERAGE GROWTH RATES OF ASSETS IN 22 INDIAN INDUSTRIES FOR FOUR SUB-PERIODS INCLUDING 1948-1968

Industries	Years				
	1948-1953	1953-1958	1958-1963	1963-1968	1948-1968[a]
Cotton Textiles	6.17	5.04	7.33	5.57	8.99
Woolen Textiles	10.62	3.07	15.33	4.24	13.91
Synthetic Textiles	6.73	17.45	24.09	6.14	30.08
Jute Textiles	3.55	0.89	4.83	3.04	3.72
Paper	6.23	15.80	25.96	6.95	31.36
Cement	8.80	10.22	9.61	6.38	16.26
Sugar	6.98	9.57	6.53	7.09	12.93
Vegetable Oil	4.30	1.81	6.54	3.73	5.43
Glass	15.60	1.21	56.78	9.06	47.67
Rubber	16.93	20.44	16.50	28.02	47.98
Tools & Instruments	18.94	14.80	21.40	10.12	47.34
Industrial Machineries	9.59	5.66	44.54	6.17	35.08
Automobile & Ancillaries	8.15	13.09	24.90	14.27	39.41
Electrical Engineering	10.35	25.52	24.40	17.66	48.79
Mechanical Engineering	12.54	14.22	27.17	6.44	38.24
Metallurgical Industry	9.48	19.61	19.68	8.26	35.93
Alkalies & Allied Chem.	4.33	18.38	20.15	10.85	31.17
Fertilizers	1.33	3.32	35.03	31.44	44.91
Organic Chemicals	5.71	18.44	38.13	19.41	49.99
Plastic Chemicals	1.99	50.39	43.64	9.39	48.31
Dyes	0.41	52.90	48.50	7.53	49.99
Drugs & Pharmaceuticals	7.79	11.18	13.81	15.02	29.38

[a]Growth rate = (1968 size / 1948 size) - 100.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

in 1953-1958 and this rose further to 16 industries in 1958-1963. But as we have seen before in our discussion of the economic conditions of India under various Plans, 1963-1968 was a period marked by much slower growth of the economy. However, in this period an average annual growth of 10 per cent occurred in 7 industries. In 1948-1953 there was no industry where the rate of growth was close to 20 per cent per annum, but during 1953-1958 in 4 industries it was more than 20 per cent and in 1958-1963 13 industries exceeded 20 per cent. In 1963-1968 only 2 industries witnessed such an impressive growth rate.

In the majority of industries the rate of growth was greatest in the 1958-1963 quinquennium, next greatest in 1953-1958. The 1948-1953 and the 1963-68 periods were marked by much lower rates of growth in most industries, the lowest being 1948-1953. When all 22 industries are taken into account, as shown in Table 6-5, it is found that the annual growth rate for the years 1958-1963 was over 25 per cent while that for 1953-1958 was about 21 per cent. Both 1948-1953 and 1963-1968 showed a comparatively modest growth rate of about 10 per cent on the average.

When we consider the entire period of 1948-1968, the arithmetic average growth rate of 32.81 per cent strikes us as a very important achievement in these two decades. Both

TABLE 6-5

AVERAGE ANNUAL GROWTH RATES, STANDARD DEVIATIONS, AND COEFFICIENTS OF VARIATIONS FOR SELECTED PERIODS FOR ALL INDUSTRIES

Years	All Industries		
	Average Annual Growth Rates[a]	Standard Deviations	Coefficients of Variation
1948-1953	8.10	4.88	12.04%
1953-1958	20.81	31.38	30.15%
1958-1963	26.89	19.11	14.21%
1963-1968	13.92	20.03	28.77%
1948-1968	32.81	15.91	2.42%

Source: Basic data taken from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

the standard deviations and the coefficients of variations were also much lower than those of three other sub-periods. The dispersion in growth rates was highest in 1953-1958 when the coefficient of variation also attained the highest value. Thus 1953-1963 was the decade when India witnessed the maximum rate of growth of her industries, mainly due to the efforts of economic planning to boost up industrial production and broaden the industrial base. The period 1948-1953 were the years of preparation for the industrial take-off in the wake of India's political freedom and partition of the country, while 1963-1968 were the years when the economy was hit by recession forcing the postponement in launching the Fourth Five Year Plan.

The arithmetic average growth rates among these 22 industries were quite uneven during this entire period, as seen in Table 6-4. When we divide the main industries into three principal groups, as done in Table 6-6, it is evident that the two principal groups that scored the highest rate of growth were the engineering and the chemical groups, reaching an annual average growth rate of over 40 per cent during 1948-1968. The growth rate for the five "traditional" Indian industries was a moderate 14 per cent. Again, for all three groups 1958-1963 was the period of maximum growth, and 1953-1958 coming next to it. For engineering and chemicals groups, the lowest annual rate of growth occurred during 1948-1953, while for the five "traditional" industries it was during 1963-1968 that the annual rate of growth was at the ebb. But the dispersal of the growth rate was also highest in the chemical group where both the standard deviations and the coefficients of variations showed the highest values for 1953-1963. As regards the other two groups, standard deviations were comparatively much lower along with low values for coefficients of variations.

A large part of these over-all impressive growth rates in terms of asset size as shown by these principal Indian industries could be accounted for by the entry of new firms during 1948-1968, besides internal expansion by already

TABLE 6-6

AVERAGE ANNUAL GROWTH RATES, STANDARD DEVIATIONS, AND COEFFICIENTS OF VARIATIONS FOR SELECTED GROUPS OF INDUSTRIES

Years	All Industries Average Annual Growth Rates[a]	All Industries Standard Deviations	All Industries Coefficients of Variations
	Five "Traditional" Industries		
1948-1953	6.34	1.88	5.94%
1953-1958	8.30	5.62	13.54%
1958-1963	10.85	8.61	15.87%
1963-1968	5.80	1.65	5.69%
1948-1968	14.65	10.44	3.56%
	Engineering Group		
1948-1953	11.51	3.91	6.80%
1953-1958	15.48	6.66	8.60%
1958-1963	27.01	8.98	6.65%
1963-1968	10.48	4.43	8.45%
1948-1968	40.96	6.13	0.74%
	Chemical Group		
1948-1953	3.89	3.51	10.62%
1953-1958	42.67	22.74	10.75%
1958-1963	46.60	53.55	22.98%
1963-1968	15.61	8.85	11.34%
1948-1968	42.46	9.64	1.13%

[a]Cotton, jute, paper, cement, and sugar.

Source: Basic data taken from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

existing firms. As shown in Table 3-12 in Chapter III, the highest growth rate of new firms occurred during 1958-1963 when in 16 industries it was more than 3 per cent per year, while in 1953-1958 it cocurred in 14 industries. During 1948-1953 only in 4 industries there were new firms by more than 3 per cent of the total, while in 1963-1968, it occurred in 3 industries only. Thus both the internal expansion and entry by new firms became the pivotal factors for the impressive growth rates of principal Indian industries as envisaged during 1948-1968.

The decade 1953-1963 was the most crucial one in the history of India's economic development. Using Professor Rostow's terminology we can say that this was the period when India attained her "take-off" state.[10] It certainly represents an acceleration of growth that was recorded in the preceeding five decades of India's modern history. To quote Professor K.N. Raj:

> The rate of economic growth that has been achieved in India since 1950-51 is 2 to 3 times as high as the rate recorded earlier under British Administration. As a result, the percentage increase in national income in the last thirteen years has been higher than the percentage increase realized in India over the entire preceeding half a century. . . . Judged by criteria such as these the growth rate achieved in India in the last decade and half is certainly a matter for some satisfaction.[11]

Concentration and Growth of Indian Industries

Two major goals of economic planning in India are the augmentation of national income at an accelerating rate and the decrease in inequities in various phases of economic life. The Industries (Development and Regulation) Act of 1951 stated, among its objectives, "the prevention of concentration of ownership of industries." In order to achieve the objective of economic growth, the Government under all three Five Year Plans gave the priority to the program of massive industrialization, both in capital and consumer goods industries. Not only were investments in the public and private sectors increased manifold but particular attention was given to the effort of founding firms under new entrepreneurs, and not under well-established industrial houses. Industries were dispersed in order to bring regional balance and decrease local monopolies. At the same time regulation of managing agencies became more stringent. We would thus expect that with the growth of industries and the increase in the number of firms under different managements, concentration in major industries, particularly those held by managing agencies, would decline in the last two decades of India.

In Table 3-13 of Chapter III we have seen that in 64% of the industries covered, 4-firm concentration ratios declined by more than 5 percentage points, while the average annual

growth rates of these industries was 30 per cent or over during 1948-1968. The inverse relationship between industry growth and changes in the level of concentration suggests a negative correlation between growth and concentration. This will be tested further with the help of regression analysis.

There are many theoretical reasons in economic literature for assuming the inverse relationship between concentration and growth. For instance, there may be rapid entry into the growing industries, and dominant firms may encounter difficulties in expanding as fast as the entire industry.[12] Or, there may be diseconomies of scale of the static sort, and other organizational constraints may be working, which are known in the literature as the "Penrose effect."[13]

Attempts to test the hypothesis empirically had been made by Professors Nelson, Shepherd and Kamerschen with the help of United States manufacturing data. Both Nelson's and Shepherd's studies had confirmed the negative correlation between concentration and growth. Professor Nelson found "positive though not conclusive support" for the hypothesis that growth was associated with declining concentration for the period 1947-1954.[14] Professor Shepherd's study had shown that changes in concentration were significantly (negatively) associated with the growth variables during 1947-1958 for United States manufacturing industries.[15] Only Professor Kamerschen had found no significant relationship between changing

concentration and industry growth.[16]

In Table 6-7 we have fitted simple regression equations for the several sub-periods, and also for 1948-1968. Both the percentage change in assets (ΔAS) and the percentage change in the number of firms (ΔNF) have been regressed on our dependent variables--percentage changes in 4-firm concentration ratios (ΔC_4) and 8-firm concentration ratios (ΔC_8). The equations have been fitted for four sets of time periods, namely 1948-1968, 1953-1968, 1958-1968, and 1963-1968. In the equations for the three time periods we find the expected negative signs between changes in concentration ratios and changes in the growth rate of industries, and between changes in concentration ratios and changes in the number of firms. Both for 1948-1968 and 1953-1968, the rates of asset growth and firm change explain jointly more than 10 per cent of the variation in 4-firm concentration ratios, and about 6 per cent of that in 8-firm concentration ratios. The t-values for ΔAS are significant at .01 per cent level of significance in all these equations and for ΔNF significant at .05 per cent level except for the equation for 1948-1968 where it is significant at .01 per cent level (with ΔC_8 as dependent variable).

Secondly, as the time period shrinks, so do the t-values, and for the period 1963-1968 the t-values are not significant at any level of significance. This is also reflected in the

TABLE 6-7

RESULTS OF SIMPLE REGRESSIONS WITH CHANGES IN CONCENTRATION AS DEPENDENT VARIABLE IN 22 INDIAN INDUSTRIES

Years	Dependent Variables	Independent Variables	Regression Coefficients	t-Values	R^2
1948-1968	ΔC_4	Δ AS	-0.0288	-4.0563[a]	.450
		Δ NF	-0.0729	-2.9877[a]	.307
	ΔC_8	Δ AS	-0.0116	-3.3809[a]	.394
		Δ NF	-0.0568	-2.5998[b]	.301
1953-1968	ΔC_4	Δ AS	-0.0314	-4.1315[a]	.456
		Δ NF	-0.0791	-3.3395[a]	.362
	ΔC_8	Δ AS	-0.0189	-2.7391[b]	.289
		Δ NF	-0.0421	-2.5011[b]	.323
1958-1968	ΔC_4	Δ AS	-0.0285	-2.7669[b]	.275
		Δ NF	-0.0359	-2.4538[b]	.273
	ΔC_8	Δ AS	-0.0203	-2.6639[b]	.247
		Δ NF	-0.0310	-2.3896[b]	.322
1963-1968	ΔC_4	Δ AS	0.0056	0.2058	.012
		Δ NF	-0.0242	-0.2186	.043
	ΔC_8	Δ AS	-0.0365	-1.5703	.334
		Δ NF	-0.0644	-0.6498	.022

[a]Significant at .01 per cent level.

[b]Significant at .05 per cent level.

Source: Basic data taken from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

values of R^2 which have decreased along with the time-span, and for 1963-1968 again have shown no relationship between the variables. This is mainly because as the number of years declines, so also is the rate of change among the variables. As seen in Table 3-1 and 3-2 in Chapter III, both 4-firm concentration ratios had shown least change in 1963-1968 as compared to longer time periods. For the same reason when regression equations for the sub-periods 1948-1953, 1953-1958, 1958-1963, and 1963-1968 were fitted, the b-coefficients obtained were not significant at any level of significance.

Thirdly, in almost all these equations the change in the number of firms (ΔNF) accounts for more of the variation in both 4-firm and 8-firm concentration ratios than does industry growth rate. For the dependent variable ΔC_4 in 1948-1968 and 1953-1968, it explains more than 7 per cent of the variation. Again, it has lost values with the decrease in time span, and for the period of 1963-1968 it has no significant t-value or R^2 to explain changes in concentration ratios.

Finally, both the independent variables showed much lower b-coefficients when ΔC_8 is the dependent variable. For the years 1948-1968 and 1953-1968 they have a little more than half of the values of coefficients as compared to the results for ΔC_4, except in 1958-1968 whenthey were roughly equal for ΔC_4 and ΔC_8. The lower values for ΔC_8 are to be expected for, as seen in Chapter III, percentage changes in 8-firm

concentration ratios were much lower than those in 4-firm ratios. Again, like all other equations, coefficients for ΔC_8 decline in significance as the time period shortens.

When we fit the multiple regression equations for these four time periods, the same trends are evident as observed in the case of simple regression. As seen in Table 6-8, the signs in almost all these regression equations, except one for the years 1963-1968, are in the right directions, as expected by our null hypothesis. But here in most of the equations the values of the coefficients are considerably lower as compared to the simple regression equations. Also, the differences in the values of coefficients between AS and NF are indistinguishable in the multiple regression model. Regarding the significance of t-values, all other coefficients in the first three time periods are significant at .05 per cent level except in the equation for 1948-1968 where the coefficient for ΔC_4 (ΔNF is the independent variable) is significant at .01 per cent level. As for the possibility of multicollinearity between the two explanatory variables we find that the correlation between ΔAS and ΔNF has not exceeded .507 in any of the first three equations. (For the table showing the correlation matrix, see Appendix G.)

In the multiple regression model also, the equations for the period 1963-1968 are not significant at any meaningful

TABLE 6-8

RESULTS OF MULTIPLE REGRESSION EQUATIONS WITH CHANGES IN CONCENTRATION IN 22 INDIAN INDUSTRIES AS DEPENDENT VARIABLE

Years	Dependent Variables	Independent Variables	Regression Coefficients	t-Values	F-Ratios	R^2
1948-1968	ΔC_4	ΔAS	-0.0240	-2.8529[b]	8.171[c]	.462
		ΔNF	-0.0206	-3.6560[a]		
	ΔC_8	ΔAS	-0.0167	-2.5953[b]	7.570[c]	.432
		ΔNF	-0.0202	-2.9192[b]		
1953-1968	ΔC_4	ΔAS	-0.0280	-2.7381[b]	8.059[c]	.459
		ΔNF	-0.0215	-2.9047[b]		
	ΔC_8	ΔAS	-0.0227	-2.7069[b]	8.650[c]	.437
		ΔNF	-0.0203	-2.3359[b]		
1958-1968	ΔC_4	ΔAS	-0.0182	-2.5540[b]	7.822[c]	.383
		ΔNF	-0.1066	-2.3602[b]		
	ΔC_8	ΔAS	-0.0105	-2.4001[b]	7.538[c]	.356
		ΔNF	-0.1623	-2.4937[b]		
1963-1968	ΔC_4	ΔAS	-0.0116	0.3602	5.824	.159
		ΔNF	-0.0481	-0.3871		
	ΔC_8	ΔAS	-0.0382	-1.3790	2.180	.110
		ΔNF	-0.0133	-0.1179		

[a]Significant at .01 per cent level.

[b]Significant at .05 per cent level.

[c]With 2 independent variables and 22 observations, the F-ratios are significant at .05 per cent level.

level simply because of the percentage change in concentration ratios for these five years were very small, as seen in Chapter III. There is also a slight decrease in the values of coefficients for the period of 1958-1968 as compared to the first two larger time periods. The values of R^2 too reflect the decreasing significance as the time-interval shortens, ending with no significance when the time-span is only of five years. That the regression relationships are not meaningless and spurious can be seen from the comfortable values of F-ratios which are all significant at the .05 per cent level for the first three time periods.

In Table 6-9 we have pooled the observations from four time periods and have used three dummy variables for three time periods to examine the inter-period effects on the regression equations. For the equation with ΔC_4 as the dependent variable we find that the percentage change in the number of firms (ΔNF) has become much more important in explaining the variations in 4-firm concentration ratios (about 9 per cent), but the growth of assets (ΔAS) has become of little significance as explanatory variable. When ΔC_8 is used as the dependent variable, ΔNF shows even further higher value, while the coefficient for ΔAS decreases further in value. As for the dummy variables for three time periods, only one is significant in the first equation, namely for the period 1958-1963 when

TABLE 6-9

RESULTS OF MULTIPLE REGRESSIONS WITH YEAR DUMMIES AS INDEPENDENT VARIABLES IN 22 INDIAN INDUSTRIES

Dependent Variables	Independent Variables	Regression Coefficients	t-Values	F-Ratios	R^2
ΔC_4	Δ AS	-0.0163	-2.73[c]		
	Δ NF	-0.0887	-3.23[b]		
	D_1 (1953-58)[a]	-1.9573	-1.15	6.23[d]	.275
	D_2 (1958-63)	-3.5923	-2.12[c]		
	D_3 (1963-68)	-1.6522	-0.99		
ΔC_8	Δ AS	-0.0100	-2.30[c]		
	Δ NF	-0.1042	-4.26[b]		
	D_1 (1953-58)	-0.3618	-0.24	5.90[d]	.265
	D_2 (1958-63)	-1.5235	-1.01		
	D_3 (1963-68)	0.5982	0.39		

[a] D_1 was given the value of 1 for 1953-58, and 0 for the other two periods. Similarly, D_2 was given the value of 1 for 1958-63 and o for the other two periods. For D_3, 1963-68 period was given the value of 1 and 0 for the other two periods.

[b] Significant at .01 per cent level.

[c] Significant at .05 per cent level.

[d] Significant at .01 per cent level.

Source: Basic data taken from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

the underlying structural changes in Indian industries were the maximum. Thus an important reason why the dummy variable for the 1958-1963 period was statistically significant was due to the fact that the period was more closely related to the objectives of the Second Five Year Plan. It was during 1958-1963 that a massive program of investment in the industrial sector was undertaken both in the public and private domains that resulted in far-flung changes in the Indian economy.

When we pool the observations for four time periods into a single equation for the two dependent variables, the following results are obtained:

$$\Delta C_4 = 1.2974 - \underset{(-2.54)}{0.0145}\Delta AS \; \underset{(-3.74)}{-0.0959}\Delta NF \qquad R^2 = .246 \qquad F = 13.86, \; N = 88$$

and

$$\Delta C_8 = 0.8635 - \underset{(-2.10)}{0.0110}\Delta AS \; \underset{(-4.01)}{-0.0742}\Delta NF \qquad R^2 = .269 \qquad F = 15.66, \; N = 88$$

where the t-values, given in parentheses, are significant at .05 per cent level for ΔAS and .01 per cent level for ΔNF respectively. The main difference of these equations from the equations as shown in Table 6-8 is that with the pooling of observations across the time periods, the percentage change in the number of firms (ΔNF) has become much more important than the percentage change in the asset size of firms (ΔAS).

Thus the results obtained from the regression models uphold the hypothesis that industrial concentration in the principal Indian industries have decreased systematically with the significant growth of industries and with the increase in the number of firms during 1948-1968. This is consistent with the results obtained by Professors Nelson and Shepherd when data pertaining to the United States manufacturing industries were used. In all these empirical investigations the regression models, however, could not explain more than 15 per cent of the variation in the level of concentration.

Growth Rates Among Firms Controlled by Large Industrial Houses, 1948-1968

India's large industrial houses had grown considerably in asset size during 1948-1968. As seen in Table 6-10, the arithmetic average annual growth rates were more than 10 per cent in 18 out of 22 industries; in 15 industries the rate was more than 20 per cent during these two decades. Only in woolen textiles, jute, vegetable oil, and fertilizer did the growth rate stand at less than 10 per cent in this period. In all engineering industries it was more than 30 per cent while in chemical industries this rate was attained by 3 industries, the other two showing a rate higher than 20 per cent per annum. Even in "traditional" Indian industries like cotton, paper, cement and sugar, the average annual growth rate

TABLE 6-10

ARITHMETIC AVERAGE OF GROWTH RATES OF ASSETS AND THE NUMBER OF FIRMS CONTROLLED BY LARGE INDUSTRIAL HOUSES IN 22 INDIAN INDUSTRIES, 1948-1968

Industries	Years					
	1948-1958		1958-1968		1948-1968	
	Annual Mean Growth Rates of Assets	Number of New Firms	Annual Mean Growth Rates of Assets	Number of New Firms	Annual Mean Growth Rates of Assets	Number of New Firms
Cotton Textile	8.23	18	7.19	5	10.67	23
Woolen Textile	3.03	0	6.78	0	5.93	0
Synthetic Textile	15.14	2	18.79	1	31.19	3
Jute Textile	5.41	18	5.30	-3	6.79	15
Paper	35.03	1	17.04	2	44.77	3
Cement	10.13	4	10.03	0	15.17	4
Sugar	8.88	9	8.43	1	12.41	10
Vegetable Oil	4.95	0	7.90	1	8.38	1
Glass	6.07	1	22.08	1	20.77	2
Rubber	58.49	1	33.48	1	49.95	2
Tools & Instruments	32.25	4	13.73	2	45.13	6
Industrial Machineries	16.07	2	21.92	2	36.61	4
Automobile & Ancillaries	10.86	2	25.01	6	31.52	8
Electrical Engineering	26.78	3	37.29	6	49.95	9
Mechanical Engineering	28.49	5	18.48	13	49.81	18
Metallurgical Industry	17.90	5	17.37	3	33.55	8
Alkalies & Allied Chem.	15.33	3	15.63	5	27.46	8
Fertilizer	7.60	1	16.56	1	9.29	2
Organic Chemicals	10.91	0	26.24	0	32.89	0
Plastic Chemicals	21.45	1	79.82	2	49.99	3
Dyes	10.00	2	76.34	0	49.99	2
Drugs & Pharmaceuticals	11.06	1	16.23	0	22.62	1

was above 10 per cent for this period.

When we compare these growth rates between the two decades encompassing 1948-1958, and 1958-1968, we find that in the majority of industries covered the rate was higher in 1958-1968 than in 1948-1958. In 12 out of 22 industries the average annual growth rate was significantly higher during 1958-1968 than the previous decade, while only in 5 industries the growth rate was higher in 1948-1958 than the later decade. One of the main reasons for these "traditional" Indian industries to grow faster during 1948-1958 than the later decade was the fact that many of the large industrial houses had acquired the control of firms held previously by British Managing Agencies who had left India by that time. Again, in most of chemical and engineering industries the growth rate was higher during 1958-1968 than the earlier period.

As for the role of new firms in this impressive growth performance, we find that new firms had played a less significant role as compared to their performance for the growth of whole industries. As seen in Table 6-10, the number of new firms launched under the control of large industrial houses were very few in most industries during this period. In 10 industries the number was less than or equal to 3 firms during these entire two decades, while for two industries it was nil in the same period. Only in cotton, jute, sugar and mechanical

engineering industries the number rose to 10 or more during 1948-1968. This was mainly because the large Indian houses had acquired the control of firms previously held by British managing agencies, particularly during 1948-1958. In the case of jute industry, the total number of firms under the houses had actually declined in 1968 as some firms left the control of these industrial houses. But for other industries, notably in engineering and chemical groups, the number of new firms had remained the same in 1958-1968 when compared with the 1948-1968 period. The reason for this can be seen in Table 4-6 of Chapter IV which showed the effectiveness of the government's industrial licensing policy in forestalling entry by large Houses.

When we compare the growth rates of large industrial houses with that of whole industries, we find that the part of industries controlled by large houses grew somewhat faster than the industry as a whole. In 10 out of 22 industries the assets of firms under large houses had grown higher than the industrial average, while in 9 industries the rate was lower; growth rates were about the same in the 3 remaining industries. Only in glass and fertilizer were the growth rates of firms under large houses considerably lower than the industrial average, while for industries like tools and instruments, metallurgical, and drugs, the difference between the two rates

was less than 3 percentage points during 1948-1968. Again, for chemical and engineering industries, the growth rates for firms under large houses were lower than the industrial average in 4 chemical and 3 engineering industries respectively, although nowhere the difference was very great. In "traditional" Indian industries like cotton, jute, and paper firms under industrial houses grew faster than the industrial average, mainly because of acquisition of firms from British managing agencies, while in cement and sugar the two rates had differed little in this period. Thus the growth rates of firms under large industrial houses had registered a higher growth rate of assets in almost half of the total industries, and came close to the industrial average in most of the remaining industries during 1948-1968.

We also sought to test whether the negative relationship between industry growth rates and concentration ratios found in Tables 6-7 and 6-8 hold also when the changes in concentration ratios by firms controlled by large houses in these industries are regressed on the growth rates. As seen in Table 6-11 in the simple regression model, the coefficients for both ΔAS and ΔNF are significant for the entire time period of 1948-1968, and also for the period 1958-1968, but not significant at all for ΔNF in 1948-1958 when changes in the number of firms are too small to reflect a significant t-value.

TABLE 6-11

RESULTS OF SIMPLE REGRESSIONS WITH CHANGES IN CONCENTRATION RATIOS OF FIRMS UNDER LARGE INDUSTRIAL HOUSES AS DEPENDENT VARIABLE IN 22 INDIAN INDUSTRIES

Years	Dependent Variables	Independent Variables	Regression Coefficients	t-Values	R^2
1948-1968	ΔC_4	ΔAS	-0.0428	-2.7804[a]	.429
		ΔNF	-0.0221	-1.9197[b]	.402
	ΔC_8	ΔAS	-0.0396	-2.0245[b]	.319
		ΔNF	-0.0207	-1.8903[b]	.298
1948-1958	ΔC_4	ΔAS	-0.0251	-1.9321[b]	.395
		ΔNF	0.0098	1.1016	.165
	ΔC_8	ΔAS	0.0224	1.7238[b]	.303
		ΔNF	0.0149	1.3529	.272
1958-1968	ΔC_4	ΔAS	-0.0367	-1.9945[b]	.453
		ΔNF	-0.0255	-1.7896[b]	.302
	ΔC_8	ΔAS	-0.0430	-2.3369[b]	.349
		ΔNF	-0.0328	-1.8626[b]	.358

[a]Significant at .01 per cent level.

[b]Significant at .05 per cent level.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

Again, the regression values for both ΔC_4 and ΔC_8 are mostly similar and do not show any marked difference among the equations. Also, in every equation of this table the coefficients for ΔNF are lower in values than those of ΔAS. And except for 1948-1958, the signs of the coefficients are in the expected direction, pointing to a negative relationship between changes in concentration ratios and the growth rates of firms under the control of large houses in these 22 industries.

When we look into the results of the multiple regression equations, as shown in Table 6-12, we find that the regression values of all explanatory variables are comparatively lower than those of simple regression equations, except for 1958-1968 when the values for both ΔAS and ΔNF are the highest among all the equations, a period marked by higher growth rates in assets and number of firms. Here again, the equations for the periods 1948-1968 and 1958-1968 are significant, and no equation for 1948-1958 shows any t-value high enough to be meaningful. The signs for the former two periods also affirm the underlying negative relation between concentration ratios and the growth rates. The F-ratios also are significant at .05 per cent level where the t-values for the independent variables are significant. Thus, the growth rates of assets and the number of firms under the control of large industrial houses in India had been (negatively) associated significantly

TABLE 6-12

RESULTS OF MULTIPLE REGRESSIONS WITH CHANGES IN CONCENTRATION RATIOS OF FIRMS UNDER LARGE INDUSTRIAL HOUSES AS DEPENDENT VARIABLE IN 22 INDIAN INDUSTRIES

Years	Dependent Variables	Independent Variables	Regression Coefficients	t-Values	F-Ratios	R^2
1948-1968	ΔC_4	ΔAS	-0.0210	-2.4580[b]	5.720[c]	.471
		ΔNF	-0.0156	-1.9149[b]		
	ΔC_8	ΔAS	-0.0247	-1.9875[b]	5.709[c]	.433
		ΔNF	-0.0312	-1.8864[b]		
1948-1958	ΔC_4	ΔAS	0.0199	0.9128	3.421	.204
		ΔNF	0.0725	0.5131		
	ΔC_8	ΔAS	0.0154	0.5923	2.060	.142
		ΔNF	0.0046	0.4529		
1958-1968	ΔC_4	ΔAS	-0.0501	-2.6648[b]	5.936[c]	.399
		ΔNF	-0.0316	-1.8525[b]		
	ΔC_8	ΔAS	-0.0584	-3.2087[a]	5.653[c]	.373
		ΔNF	-0.0456	-2.1901[b]		

[a]Significant at .01 per cent level.

[b]Significant at .05 per cent level.

[c]With 2 independent variables and 22 observations, the F-ratios are significant at .05 per cent level.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook Of India, various issues covering 1948-1968.

with the changes in the concentration ratios of firms under the control of these houses, a relationship borne true when the concentration ratios and growth of industries as a whole were taken into consideration.

NOTES

[1]Manubhai Shah, "Indian Economy at Cross Roads," Eastern Economist, Dec. 1, 1967, pp. 987-89.

[2]Ibid., p. 987.

[3]Eastern Economist, Dec. 27, 1968, pp. 1147-48.

[4]M. Shah, op. cit., p. 988.

[5]Ibid., pp. 987-88.

[6]J.N. Bhagwati and P. Desai, India: Planning for Industrialization (London, 1970), p. 62.

[7]O.E.C.D. Development Centre, Population of Less Developed Countries (1967), p. 12.

[8]Eastern Economist, Dec. 1, 1967, pp. 987-89.

[9]A. Kapoor, "Research and Development and Product Modifications," Oriental Economist, Oct., 1968, pp. 30-34.

[10]W.W. Rostow, The Stages of Economic Growth (Cambridge, 1960).

[11]K.N. Raj, Indian Economic Growth: Performance and Prospects (New Delhi, 1965), p. 2.

[12]W.J. Baumol, "On the Theory of the Expansion of the Firm," Am. Econ. Rev., Dec., 1961, pp. 1078-1087.

[13]E.T. Penrose, The Theory of the Growth of the Firm (Oxford, 1959). For a discussion of the "Penrose Effect", see T.Y. Shen, "Economies of Scale, Penrose Effect, Growth of Plants and their Size Distribution," Jour. Pol. Econ., 1969, pp. 702-16.

[14]R.L. Nelson, "Market Growth, Company Diversification and Product Concentration, 1947-1958," J. Am. Stat. Asso., Dec., 1960, pp. 640-649.

[15]W.G. Shapherd, "Trends of Concentration in American Manufacturing Industries, 1947-1958," Rev. Econ. Stat., May, 1964, pp. 200-212.

[16]D.R. Kamerschen, "Market Growth and Industry Concentration," Jour. Am. Stat. Asso., March, 1968, pp. 228-241.

CHAPTER VII

GENERAL CONCLUSIONS AND POLICY IMPLICATIONS

Summary of Findings

Our study has attempted for the first time to examine the changes in the patterns of industrial concentration in India for the entire two decade period (1948-1968) since her independence in August, 1947. This was also the period marked by the launching of three Five Year Economic Plans to industrialize the economy and achieve more rapid economic growth. Since the impact of this drive would fall heavily on major Indian industries, this would give us the opportunity to probe into the structural change brought out by this two decade period of growth by economic planning.

The most important finding emerging from our study is that the majority of Indian industries were highly concentrated during 1948-1968. In 1948, 17 of the 22 industries studied had 4-firm concentration ratios above 50 per cent; in 1968 this was true for 14 industries. However, in most of these industries the degree of concentration declined considerably in this period. Eighteen of 22 industries had witnessed a decline in 4-firm concentration from 1948 to 1968 while only

4 industries showed increases. Industries with 4-firm concentration ratios above 70 per cent had declined from 12 in 1948 to 7 in 1968, and in 7 industries the decline was continuous throughout the period. This decrease in concentration ratios was most marked in the fast-growing engineering and chemical industries. Increases in concentration were more typical in the "traditional" Indian industries like cotton, jute and vegetable oils. Of the two decades covered by our study it was largely during 1953-1963 that major changes in concentration took place. This occurred over a period when the first two Five Year Plans were completed and the Third Plan was launched.

The same trend was observed when 8-firm concentration ratios were examined. This ratio decreased in 17 industries, increased in 4, and remained constant in one; the changes occurred in the same industries showing changes in 4-firm concentration ratios. This is an indication that the trend of structural change continued unabated when the relative dispersal at the top of distribution was taken into account.

When we examine change in relative concentration, the Gini coefficients decreased significantly only in 4 industries. The coefficients increased in "traditional" Indian industries like cotton and jute as well as in fast-growing industries like engineering and chemicals. Again, the level of relative concentration was also very high. In 11 of 22 industries the

Gini coefficients were above 50 per cent in 1948 while in 1968 the number rose to 15 industries.

Using the Herfindahl index as an alternative measure of concentration, we find that in 16 industries it had decreased or remained virtually constant in 1968 as compared to 1948. Thus concentration at the top had decreased significantly in most industries along with relative concentration when fewness of firms was considered (the Herfindahl index). This was reflected in the fact that the new firms that joined the industries after 1948 were of substantial size. It was in the middle range of size distribution that firms swelled in size and caused fundamental changes in the industrial structure during 1948-1968.

We have also compared the level of industrial concentration of India with that of the United States, the United Kingdom, Canada and Japan. In almost all of the U. S. industries listed, the degree of concentration was much lower than that in the same industry in India; the 4-firm ratios were lower in the U. S. in 16 out of 21 industries. For the U. K., in 8 out of 10 engineering and chemical industries the 4-firm concentration ratios were lower as compared to India. For Japan also, industrial concentration was much lower than India--in 13 out of 15 industries compared the 3-firm ratios were lower in Japan. Only in the case of Canada did we find a similarity in the level

of concentration between these two countries. The differences in the levels of industrial concentration can thus be seen negatively associated with the size of markets. As the domestic (and foreign) markets are much larger in the U. S., U. K., and Japan as compared to India, the degree of concentration in their respective industries is also much lower. The similarity between Canada and India is thus due to the smaller sizes of their respective markets.

The study next examined the role played by managing agencies and large industrial houses that typically controlled these firms. Here we find that the percentage of firms and the asset size of firms under the control of managing agencies had decreased in 15 of the 22 industries. In traditional industries like cotton, jute, paper and sugar, the shares held by the managing agency firms had declined significantly from 1948 to 1968. With the exception of cotton and jute--the traditional base of the Managing Agency System--in almost all industries a significant number of new firms came under the control of managing agencies. Thus the hold of the managing agencies had shifted from old established firms to new entrants, launched after 1948 and managed by managing agencies.

Although the days of the Managing Agency System in India are numbered, as the recent enactment of phased abolition of the System after 1970 is gradually taking place, it is the

large industrial houses with majority stockholdings in most cases that control and guide most of the large firms in Indian industries today. Here we found that 4-firm concentration ratios held by firms under the large industrial houses decreased in 11 industries and increased in 7 during 1948-1968. The percentage share of large multi-firm houses in three "traditional" Indian industries of cotton, jute and paper increased considerably while it decreased only slightly in the other two "traditional" industries, cement and sugar. Moreover, when the changes in shares of all 70 of the largest houses in all 22 industries studied were examined, we found that the share of 4 and 8 largest houses had shown little change in these two decades, registering only a 2 per cent decline on the average from 1948 to 1968.

There was a tremendous disparity in size among these 70 large industrial houses in India, and this inequality had remained almost constant during 1948-1968. The top 7 houses had controlled about 50 per cent of the total assets of all 70 industrial houses in 1948, and in 1968 the percentage rose modestly to 54 per cent. This extremely skewed distribution among large houses was again reflected in the high values of both the Gini coefficients and the Herfindahl index for these houses which increased by about 4 percentage points between 1948 and 1968. The largest two houses, namely Tata and Birla,

had managed to maintain their percentage share in the aggregate of 22 industries, this in spite of considerable decline in industry concentration in the majority of industries.

We next considered the size-mobility among these 70 large houses in these two decades. Considerable rank-shifts were found to have taken place among these houses as reflected in decreasing values of the rank correlation coefficients. However, among the top 8 houses, turnover was insignificant in this period. Higher turnover occurred only among groups of houses ranking from 20 to 50 houses in size. The main reason for this rank-order changes was that many industrial houses had acquired the shares of British managing agencies as they left India after 1948. Also, with the relatively higher growth of the engineering and chemical industries those houses that expanded in these directions had improved their rankings considerably in 1968 as compared to 1948.

Next examined was the relationship between the degree of concentration and the growth rate of assets and change in the number of firms in the 22 industries. We found that about 10 per cent of change in concentration can be explained by these two variables. A systematic and consistent negative relationship was found between concentration and growth. The number of firms did somewhat better in explaining changes than did the growth variable. Our result thus confirms the

theoretical predictions of the direction of this relation and supports the empirical findings of Professors Nelson and Shepherd for the U. S.

We also examined the growth rates of firms controlled by large industrial houses and changes in the number of firms under these houses. We found that the growth rates of firms under these houses were similar to those of the industries of which they were a part. Changes in the number of firms did not appear to play a major role in growth. As for the relationship between changes in concentration ratios among firms under the control of large houses and their respective growth rates, we found that the negative relationship held sway in most of the regression equations, except for the period 1948-1958 when changes in the relevant variables were not significant enough to reflect a definite relationship.

Policy Implications

Our study has revealed that the concentration in major Indian industries, although at a much higher level when compared to Western countries, declined significantly with the growth of the industries during the last two decades (1948-1968). The growth of the economy as propelled by the massive industrialization process under three Five Year Plans had created a momentum which, although abated during 1966-69, had regained its vigour with the launching of the Fourth

Plan (1969-74). With the rapid development of modern industries like engineering and chemicals, and the phased abolition of the Managing Agency System, the degree of concentration is likely to decline further as the economy advances.

But the industrial policy of the Government runs counter to this drive for economic growth as envisaged in the economic planning. As seen in our study, one of the important instruments for this decrease in concentration was the entry of new firms, particularly in those industries where the decline was greatest. However, the Industrial Licensing Policy of the Government had erected an administrative barrier to this entry from the very beginning of its inception in 1951. The "Development Wing" of the Ministry of Commerce and Industry has been entrusted with the power of issuing new licenses or the renewal of the old ones, either for expansion or for the current business of the industries, after examining capacity, demand, foreign exchange components, compliance of Government's policies, and other considerations.

But apart from practical considerations, the existing licensing procedures of the Government are subject to criticisms on theoretical grounds alone. First, while the Development Wing specifies that no new firm will be given license to operate in an industry suffering from "excess capacity," it may be pointed out that the term "excess capacity" must be defined

properly, particularly in the context of a dynamic economy which India wants to achieve through economic planning and which the Development Wing has not done yet. Second, the relevant question is not whether the industries concerned are laden with surplus capacity, but whether they are operating efficiently. And if the existence of excess capacity is due to endogenous causes of inefficiency or sub-optimal functioning, then licenses should be issued for new firms in order to usher in competition and efficiency of production. Third, the growth potential of the economy should be viewed with the full utilization and increment of capacity by firms and if this increase is stopped owing to the inefficiency of existing firms, the very growth process will eventually halt. There should be an arrangement for constant study of the firms to judge whether they are running efficiently according to their respective scale of operation, and here the system of efficiency audit may be implemented, if possible. Finally, if the existence of excess capacity is due to the market strategy of the existing firms in order to reap long-term monopolistic gains, in that case the non-issuing of new licenses definitely leads to more market imperfections and social injustice.

The practical applications of this licensing policy were dismal. The Dutt Commission had admitted the general

case of "over-licensing" in many industries.[1] The blanket use of the licensing procedure instead of using it in limited "priority" industries, as Bhagwati and Desai suggest,[2] has created a serious case of bureaucratic procrastination and enormous confusion in the minds of the applicants. For example, the Industries Development Procedures Committee in 1964 found that an "average license" took about 165 days to be cleared, while in major projects involving foreign financial and technical collaboration it took two to two and a half years to secure the entire package of licenses required to enable the scheme to go forward.[3] In view of this sorry state of affairs, the government appointed the Swaminathan Committee in 1965, and after receiving its report, started to de-license the industries, culminating in the delicensing of twenty-nine products in November, 1966. Thus the growth of Indian industries would have been much faster and concentration would have declined more sharply had it not been for the industrial licensing policy as implemented during 1952-1965.

With the publication of the Monopoly Commission's Report in 1966, the liberalization policy was given life and the Government's policy had shifted back again toward more stringent control of the private sector. The Monopolies and Restrictive Trade Practices Act was passed in 1969, and came into force from June 1, 1970. One of the important provisions

of this Law is to impose restriction on "dominant" firms from becoming larger. The Law has made it necessary for big undertakings to seek approval of the central government if they expand their activities by the issuing of fresh capital or by the installation of machines or other equipment. But this concept of "dominant" firms is highly unsatisfactory on economic grounds alone. The Act defines a "dominant" firm as an undertaking which by itself or along with inter-connected undertakings, controls one-third or more of the total supply of goods of any description in India or any part thereof. But, as A. N. Oza has pointed out, it sets an arbitrary criterion for identifying cases of market domination in terms of a rigid proportion (one-third) of the market supply controlled by an undertaking or a group of interconnected undertakings.[4] For purposes of anti-monopoly policy, one is interested in the effective power of a firm: whether in fact it dominates the market or not. For instance, a firm whose market share exceeds one-third of total supply may not, in fact, enjoy a dominant market position if it faces effective competition from its nearest two or three rivals, each of whom may be controlling 15 or 20 per cent of the market. On the other hand, a firm controlling just 20 per cent of the market may, in fact, be dominating the market if none of its nearest rivals produces more than, say, 5 per cent of the total supply.

The dominant firm is not directly associated with the control of more than a specific proportion of the supply.

Apart from this theoretical problem, the Law has made the assumption that "bigness" is the same as "badness"--any big firm with assets over 200 million rupees is guilty of monopoly and has to be controlled. This attack on bigness is also revealed by the latest decree by the Central Government denying licenses to the twenty largest industrial houses for any expansion of their production facilities. Now, although the economic literature has not found the definitive answer to the nature of relationship between bigness of firms and economic efficiency or progress, we have to understand the role of big firms in the context of an underdeveloped country like India with one of the lowest per capita incomes in the world. Here two of the most important ingredients of economic growth are precious commodities, namely, capital and entrepreneurship. As Hazari's study showed,[5] the main flow of entrepreneurship is still coming from the industrial houses, and most of the capital in the private sector is still provided by these houses. If the private sector has to play a viable role in the economic development of India, any prevention of growth of large firms would act as a strong deterrent to that development.

Our study shows that firms under large industrial houses had grown at the same rate as the respective industry grew during 1948-1968, and on the average a bit higher than the industry growth rate. To deny the growth of this vital part of the economy when the long-term trend is toward the decline of concentration posed by these houses, would surely cripple the lofty growth envisaged in the economic planning. Not that the government-controlled enterprises are doing well. Of the 85 public-sector concerns, which enjoy a total investment of 39 billion rupees, 73 concerns showed a net loss of 2.8 billion rupees during 1968-1969 despite government patronage and monopolistic supremacy.[6] The inefficiency and sluggishness of the small and medium-scale companies had already been witnessed during the Second Five Year Plan period (1956-1961), when so much false hope was pinned on these companies for the creation of rural employment and consumer supplies.

What India needs today is an industrial policy of economic growth, instead of concentrating on the equitable distribution of economic poverty. In an underdeveloped country like India, where the industrial sector is too small to break the agricultural stronghold of the economy, the big companies run by the industrial houses are the main sources of financing and undertaking industrial ventures in the private sector. With the new firms joining in, and with the expansion of the market,

the hold of these large houses would decline in time as our study has shown for the period 1948-1968. With declining concentration in the industries and massive industrialization program under Five Year Plans, India's take-off stage for rapid economic growth would be complete.

NOTES

[1]Government of India, Report of the Industrial Licensing Policy Inquiry Commission, Main Report (New Delhi, 1969), p. 102.

[2]J. N. Bhagwati and P. Desai, India: Planning for Industrialization (London, 1970), p. 493.

[3]Eastern Economist, March 13, 1967, p. 353.

[4]A. N. Oza, "Monopolies and Restrictive Practices Bill," Economic Weekly, Annual Number, Jan., 1969, p. 92.

[5]R. K. Hazari, Industrial Planning and Licensing Policy, (Planning Commission, Government of India, 1967).

[6]A. Ghosh, "India: Drifting Toward Chaos," Wall Street Journal, April 5, 1971.

APPENDIX A

A Specimen of Data to be Found in Kothari's Economic Guide and Investors' Handbook of India

Jute 896

THE GANGES MANUFACTURING CO., LTD.

FOUNDED in 1916 at CALCUTTA. **Directors :** Lakshmipat Singhania (*Chairman*), G. L. Bangur, B. P. Khaitan, H. S. Singhania, Bharat Hari Singhania and G. Basu. **Managing Agents:** J. K. Industries Private Ltd. **Registered Office:** 7, Council House Street, P. B. 2460, Calcutta-1. Telephone Nos.: 23-6181 (8 lines). Telegram : "Gangjutmil." **Auditors:** Lovelock & Lewes.

CAPITAL: Authorised : Rs. 1,50,00,000; Rs. 1,44,00,000 in 14,40,000 Ordinary shares of Rs. 10 each and Rs. 6,00,000 in 6,000 8% Cumulative Preference shares of Rs. 100 each. **Issued and Subscribed :** Rs. 90,32,100; Rs. 84,32,100 in 8,43,210 Ordinary shares of Rs. 10 each and Rs. 6,00,000 in 6,000 3% (taxable) Cumulative Preference shares of Rs. 100 each, all fully paid-up.

Capital History : In September 1959, the Ordinary shares of Rs. 100 each were subdivided into shares of Rs. 10 each.

Registration Fee : Rs. 2 per deed. **Sub-division and Renewal Fee :** Rs. 2 per scrip. **Date of Accounts :** Accounts yearly, March.

Objects and Activities : The Company has its Jute mill situated on the right bank of the River Hooghly at Bansberia in the Hooghly District, 28 miles north of Calcutta. Sacking: 708. Hessian: 1,001. Total Looms: 1,709. Broad Looms: 130. Spindles: 19,906.

The Mill is driven by electricity and is fully modernised.

Balance Sheet as on 31st March 1968

	Rs.		Rs.
Capital ..	90,32,100	Gross Block ..	3,96,84,960
General Reserve	86,84,415	*Less* Depreciation	2,30,17,999
Other Reserves	1,32,631		
Loans ..	1,49,96,847	Net Block ..	1,66,66,961
Liabilities ..	1,12,37,454	Liquid Assets ..	2,74,19,387
Profit & Loss a/c.	2,901		
Total ..	4,40,86,348	Total ..	4,40,86,348

Analysis of Working *Year ends 31st March*

	1962 Rs.	1963 Rs.	1964 Rs.	1965 Rs.	1966 Rs.	1967 Rs.	1968 Rs.
Paid-up Capital	90,32,100	90,32,100	90,32,100	90,32,100	90,32,100	90,32,100	90,32,100
Reserve Fund	38,01,000	56,93,282	76,50,000	80,61,398	85,11,398	84,29,398	86,84,415
Other Funds	2,92,282	21,03,021	7,11,398	..	4,71,248	2,55,017	1,32,631
Net Profit	26,38,028	33,23,155	33,08,075	§§ 9,07,252	17,97,396	87,145	3,87,887
Profit per Loom	1,544	1,823	1,818	493	1,051	50	227
Amount transferred to :							
Reserve Fund	10,00,000	16,00,000	16,02,517	..	4,50,000	..	..
Other Funds	2,91,363	21,03,021	7,11,398	..	4,71,248	1,769	1,32,631
Depreciation	5,61,655	6,61,214	12,22,744	14,22,320	14,40,639	14,43,034	..
Taxation	15,00,000	51,00,000	18,50,000	..	..	..	..
Dividend	12,64,815	††16,86,420	16,86,420	4,84,005	4,84,005	4,84,005	..
Do. Rate % p.a. ..	$15	$20	$20	$5	$5	$5	..
Carried Forward	**1,89,764	‡‡16,267	*43,666	§§ 15,896	‖ 36,416	*a*15,985	*b*2,901
Prices of Shares { Highest ..	15·25	16·12	12·94	14·94	12·12	8·31	7·00
Prices of Shares { Lowest ..	10·12	11·62	12·12	12·00	7·25	6·69	5·69

* Includes Rs. 18,415 provision for doubtful debts no longer required, Rs. 6,50,000 excess provision for taxation to previous years written back, Rs. 1,20,199 depreciation on assets separated and deducting Rs. 512 loss on Investment sold and Rs. 6,043 income-tax of a previous year.

§ Subject to deduction of tax.

** After crediting Rs. 26 refund of Income-tax, Rs. 9,320 provision for doubtful debts no longer required and Rs. 1,257 representing profit on sale of Fixed Assets.

†† Paid out of Dividend Reserve.

‡‡ Includes Rs. 11,715 refund of Income-tax, Rs. 27,064 refund of Wealth-tax, Rs. 4,570 provision for doubtful debts no longer required, Rs. 1,64,880 depreciation on assets sold and after deducting Rs. 1,050 loss on Investment, Rs. 810 loss on tractor sold.

§§ The Company had long strike during the year and out of the above profits, expenses relating to previous years amounting to Rs. 8,24,980 were also adjusted.

§§ Includes Rs. 3,00,000 transferred from General Reserve, Rs. 73,963 sundry credits and after deducting Rs. 8,24,980 expenses relating to previous years.

‖ Includes Rs. 3,367 sundry credits and after deducting Rs. 3,74,990 expenses relating to previous years.

a Includes Rs. 82,833 sundry credits, —s. 30,00,000 transferred from General Reserve and after deducting Rs. 4,635 loss on sale of assets.

b After deducting Rs. 2,05,940 being sundry debits.

APPENDIX B

Listing of Products belonging to Selected Indian Industries

-Automobile & Allied Industries

1 Arms Assembly—Arms
2 Arms Assembly—Blades
3 Axle Shafts
4 Brake Equipment
5 Brake Parts—Hose Assembly
6 Brake Parts—Repair kit
7 Carburettors
8 Clutch Assembly—Cover Assembly
9 Clutch Assembly—Driven Plates
10 Clutch Plates
11 Dash Board Instruments—Double Pressure Guages
12 Dash Board Instruments—Fare Meters
13 Dash Board Instruments—Speedometer Cables
14 Dash Board Instruments—Tank Units
15 Dash Board Instruments—Tachographs
16 Dash Board Instruments—Vacuum Gauges
17 Flywheel Ring Gears
18 Fuel & Brake Hoses
19 Fuel Pumps
20 Gudgeon Pins (Piston Pins)
21 Heavy Earth-moving Equipment—Bulldozers
22 Horn Relays
23 Jeeps
24 K. P. Bearings
25 King Pins
26 Locomotives
27 Marine Reverse & Reduction Gear Box—Marine Gears
28 Marine Reverse & Reduction Gear Box—Worm Reduction Gear Unit
29 Mobile Cranes
30 Multi-cylinder Pumps.
31 Propeller Shafts
32 Rotor Pumps
33 Sealed Beams
34 Shakle Pins
35 Solenoids
36 Taxi Meters
37 Tie Rod Ends
38 Tyre Inflators
39 U. J. Cross
40 Wiper Motors
41 Mopeds
42 Jacks
44 Nozzle Holders
45 Elements (Pump)
46 Injection Pumps (Single Cylinder)
47 Nozzles
48 ‡Elements (filter)
49 Distributors
50 Dash Board Instruments—Temperature Gauges.
51 Steering Wheels
52 ‡Diesel Engines (Vehicular)
53 Brake Drum Assembly
54 Dash Board Instruments-Speedometer
55 Heavy Earth-moving Equipment-Excavators
56 Dash Board Instruments—Single Pressure Gauges
57 Spark Plugs
58 Heavy Earth-Moving Equipment : Scapers
59 Clutch Facings
60 Clutch Assembly
61 Auto Pressings
62 Dash Board Instruments—Ampere Meters
63 Cultivators
64 Dash Board Instruments-Fuel Gauges
65 Piston Rings
66 Dash Board Instruments-Warning Lights
67 Cylinder Liners
68 Voltage Regulators
69 Brake Linings
70 Sheep Foot Rollers
71 3-Wheelers (Auto)
72 Gaskets
73 ‡Fire Extinguishers
74 Cars
75 Pistons
76 Automobiles Wheels
77 Thin-walled Bearings
78 Ignition Coils
79 Scooters (Two-wheelers)
80 Switches & Flashers
81 Ploughs
82 Petrol Dispensing Pumps
83 Motor Cycles
84 Oil Seals
85 Fork Lift Trucks
86 Filter Inserts
87 Harrows
88 Engine Valves
89 Trailers
90 Tractors
91 Dynamos
92 Starter Motors
93 Road Rollers
94 Electric Horns
95 Filters
96 Commercial Vehicles
97 Air Compressors
98 Lamps
99 ‡Radiators
100 Diesel Engines-Stationary
101 Industrial Fans and Blowers
102 Power-driven Pumps

-Electrical Engineering Industries

1 Battery Plates
2 Cap Lamps
3 Electrical Steel Sheets
4 Electronic Components for manufacturing : Abrasive Grains
5 Evaporator Thermostat (Automatic Control)
6 Gramophones
7 Heating Elements
8 Lightning Arrestors
9 Photoflash Lamps
10 Dry Batteries
11 Bi-cycle Dynamos
12 Mercury Vapour Lamps
13 Fluorescent Lamps
14 Bare Copper Conductors
15 Flash Light Cases
16 Carbon Brushes
17 Electronic Instruments
18 H. S. Meters (Poly Phase).
19 Domestic Refrigerators
20 Electrical Measuring Instruments.
21 Storage Batteries (All types)
22 Paper Insulated Power Cables
23 Brass Lamp Holders
24 Switchgear (Motor Starter
25 Miniature Lamps
26 Electric Lamps (GLS)
27 Winding Wires (Paper & Cotton covered wires & Strips)
28 Electric Fans
29 Radio Receivers (All types)
30 Room Air-conditioners
31 ‡A.C.S.R. & A.A. Conductors
32 Aluminium Conductors (ACSR)
33 Electric Motors
34 V. I. R. Cables
35 Winding Wires (Enamelled Wires)
36 P. V. C. Cables
37 Electric Wiring Accessories
38 House Service Meters (Single Phase)
39 Transformers

—Industrial Machinery

1 Boilers—Cornish
2 Boilers—Lancashire
3 Centrifugal, Oil Separators
4 Coal Cutters
5 Coal Washery
6 Construction Machinery—Prestressing Equipment
7 Construction Machinery—Tar boilers
8 Construction Machinery—Weigh Batchess
9 Construction Machinery—Winches
10 Gas Producer Plants
11 Paper Conversion Machinery
12 Paper Machinery—Calendar Bowls
13 Rayon Plants
14 Tea Processing Machinery—Dust Machine
15 Tobacco Machinery
16 Weighing Machinery—Beam Scale
17 Weighing Machinery—Misc. Items
18 Mining Machinery—Misc. Items
19 Leather Machinery
20 Boilers—Vertical
21 Agricultural Machinery—Sprayers & Dusters
22 Tea Processing Machinery—Tea Stalk Extractors
23 Construction Machinery—Stone Crushers
24 Electroplating Equipment
25 Sulphuric Acid & Super Phosphate Plants
26 Construction Machinery—Highway Mixer Combined Drying & Mixing Unit
27 Tea Processing Machinery—Dryers
28 Gas Cylinders—Low Pressure
29 Food Processing Machinery
30 Construction Machinery—Hot Mix Asphalt Plant
31 Tea Processing Machinery—Tea Sifters
32 Construction Machinery—Misc. Items
33 Oil Burners
34 Operating Equipment and Accessories
35 Construction Machinery—Asphalt Mixers
36 Reduction Gears—Helical
37 Reduction Gears—Misc. Items
39 Mining Machinery—Haulages
40 Cooling Towers
41 Ceramic Machinery
42 ‡Drilling Equipment
43 Tea Processing Machinery—C.T.C. Machines
44 Tea Processing Machinery—Tea Sorters
45 Tea Processing Machinery—Tea Rollers
46 Reduction Gears—Worm
47 Metallurgical Machinery—Misc. Items
48 Weighing Machinery—Weigh Bridges
49 Cement Mill Machinery
50 Rubber Machinery
51 Boilers—Water Tube
52 Dairy Machinery

53 Weighing Machinery—Platform Scales
54 Construction Machinery—Roller Pan Mixers
55 Printing Machinery
56 Conveyors
57 Tea Processing Machinery—Misc. Items
58 Water Treatment Plants
59 Sugar Mill Machinery—Centrifugal
60 Sugar Mill Machinery—Misc. Items
61 Construction Machinery—Concrete Vibrators
62 Rice, Dal, Flour Mill Machinery
63 Sugar Mill Machinery—Boiling Mill Machinery
64 Boilers—Misc. Items
65 Paper Mill Machinery
66 Oil Mill Machinery
67 Air-conditioning & Industrial Refrigeration
68 Agriculture Machinery—Others
69 Sugar Mill Machinery—Mill House Machinery
70 Construction Machinery—Concrete Mixers
71 Chemical & Pharmaceutical Machinery

—Metallurgical Industries

1 Aluminium Blanks
2 Aluminium Foils
3 Antimony (Virgin Metal)
4 Arsenical Copper Rods
5 Brass Billets
6 Copper (Virgin Metal)
7 Copper Rods/Sections (Non-electrical)
8 Cupro Nickel Alloys
9 Lead (Virgin Metal)
10 Lead Bronze
11 Lead Sections
12 Lead Tapes
13 Lead Wires
14 Leaded Brass Sheets/Strips
15 Manganese Bronze

16 Nickel Alloys
17 Nickel Anodes
18 Non-ferrous Anodes
19 Silver Solder
20 Solid Solder Wires
21 Tin Bronze
22 Zinc Strips/Plates
23 Aluminium Rods, Section Pipes & Tubes (Extended)
24 Phosphor Tin
25 Copper Wire (for non-electrical purposes)
26 Gun Metal Rods
27 Phosphor Bronze Rods
28 Tin (Reclaimed from tin plates)
29 Alloys—Miscellaneous
30 Resin Cored Solder Wire/Billets
31 Lead Pipes & Tubes
32 Zinc Sheets
33 Brass Pipes & Tubes
34 Lead Alloys
35 Aluminium Bronze
36 Copper Based Alloys
37 Lead Sheets
38 Copper Pipes & Tubes
39 Brass/Copper Rods/Section (Extruded)
40 Zinc Die Casting Alloys
41 Bronze—General
42 Electrolytic Copper Wire Rods
43 Aluminium (Virgin Metal
44 Antimonal Lead
45 Aluminium Sheets
46 Zinc Alloys
47 Brass Wire (for non-electrical purposes)
48 Brass Rods Section
49 Cast Iron Pressure Pipes (including Spun pipes)
50 Type Metal (including Printing Metal)

51 Aluminium Strips
52 White Metal (including Antifriction Bearing Metal)
53 M. I. Pipe Fittings
54 Brass Strips

55 Aluminium Alloys
56 Brass (Copper-Zinc base Alloys)
57 Tin Solder
58 Copper Strips
59 Aluminium Wire Rods for ACSR.
60 Copper Circles
61 Brass Sheets
62 Aluminium Circles
63 Steel Forgings

64 Phosphor Bronze
65 Phosphor Copper
66 Copper Sheets
67 Gun Metal Ingots
68 Malleable Iron Castings
69 Steel Castings
70 Brass Circles
71 Cast Iron Castings

-Alkalis & Allied Chemicals

1 Ammonium Bromide
2 Ammonium Chloride (Dry & Wet)
3 Bleaching Powder (Stable)
4 Bromine
5 Caustic Potash
6 Hydrogen Peroxide
7 Phosphorous Trichloride.
8 Potassium Bromide
9 Sodium Bromide
10 Sodium Perborate
11 Soda Ash (Heavy)
12 Sodium Bicarbonate
13 Calcium Carbonate (Activated)
14 Potassium Chlorate
15 Sodium Hydrosulphite
16 Calcium Carbonate (Precipitated).
17 Soda Ash (Light)
18 Calcium Carbide
19 Liquid Chlorine
20 Caustic Soda

APPENDIX C

Multiple Managing Agencies under one Industrial House

Industrial Houses	Managing Agencies
Bajaj	Bachhraj & Co. Ltd. Jamnalal Sons Pvt. Ltd.
Bangur	Bangur Brothers Ltd. Bombay Agency Co. Pvt. Ltd. Cotton Agents (Rajasthan) Ltd. Shree Krishna Agency Pvt. Ltd. Shree Laxmi Agents Ltd.
Birla	Cotton Agents Pvt. Ltd. Birla Gwalior Pvt. Ltd. Hyderabad Agencies Pvt. Ltd. Saran Trading Co. Ltd. Zenith Distributors & Agents Ltd. G. Das & Co. Pvt. Ltd.
Dalmia, J.	Govan Bros. (Rampur) Pvt. Ltd. Hari Bros. Pvt. Ltd.
Kasturbhai Lalbhai	Lalbhai Dalpatbhai & Co. Lalbhai Dalpatbhai Sons & Co. Lalbhai Sons & Co. Narottam Chandulal & Co. Ltd. Narottam Lalbhai & Co.
Kilachand	Chinubhai Ambalal Kilachand Devachand & Co. Pvt. Ltd. Ramdas Tulsidas & Co. Tulsidas Ambalal
Mafatlal	M. Parekh & Co. Pvt. Ltd. Mafatlal Chandulal & Co. Ltd. Mafatlal Gagalbhai & Sons Navinchandra Purshottamdas & Co. Ltd.
Naidu, G. V.	B. Rangaswamy Naidu & Sons Balasundaram & Co. G. Kuppuswamy Naidu & Co. R. Bhima Naidu & Co.

Appendix C--Continued

Ruia	Radhakrishna Ramnarain Pvt. Ltd. Ramnarain Sons Pvt. Ltd. United Agencies Pvt. Ltd.
Tata	Tata Sons Pvt. Ltd. Investa Industrial Corporation Ltd.

Source: Govt. of India, Report of the Industrial Licensing Policy Inquiry Committee, Appendices, Vol. II.

APPENDIX D

Names and Ranks of 70 Large Industrial Houses in India, 1948-68

Rank in 1948	Industrial House	Rank in 1968
1	Tata	1
2	Birla	2
3	A. C. C.	4
4	Andrew Yule	5
5	Seshasayee	8
6	Singhania	6
7	Martin Burn	3
8	Kasturbhai Lalbhai	15
9	Walchand	12
10	MacNeill & Barry--Binny	25
11	Jardine Henderson	42
12	Sahu Jain	10
13	Wadia	27
14	Bangur	7
15	Parry	30
16	Mafatlal	9
17	Finlay	39
18	Shri Ram	14
19	A. & F. Harvey	24
20	Bird-Heilgers	23

Appendix D--Continued

Rank in 1948	Industrial House	Rank in 1968
21	Gillanders Arbuthnot	41
22	Thapar	13
23	Jaipuria	47
24	Sarabhai	28
25	Bajaj	21
26	Killick	62
27	Dalmia, J.	20
28	Goenka	33
29	Soorajmull Nagarmull	11
30	Chinai	19
31	Muthiah	49
32	Ruia	44
33	Kamani	45
34	Indra Singh	35
35	Modi	32
36	Thackersey	57
37	Ramakrishna	40
38	Shaw Wallace	63
39	Naidu, G. V.	17
40	Agarwala, R. K.	65
41	I. C. I.	22

Appendix D--Continued

Rank in 1948	Industrial House	Rank in 1968
42	Elias, B. N.	61
43	Kirloskar	16
44	Srivastava, J. P.	64
45	Khatau	36
46	Amin	34
47	Podar	54
48	Mangaldas Parekh	60
49	Mahindra & Mahindra	18
50	Thiagaraja	43
51	Talukdar Law	53
52	Vissanji	58
53	Shapoorji Palonji	48
54	Turner Morrison	59
55	Mangaldas Jaisinghbhai	52
56	Killachand	26
57	Jain, S. P.	38
58	Pierce Leslie	68
59	Naidu, V. R.	31
60	Simpson	46
61	Balmer-Laurie	55
62	Kanoria, B.	56

Appendix D--Continued

Rank in 1948	Industrial House	Rank in 1968
63	Kothari, D. C.	51
64	Iyengar	37
65	Dalmia, R. K.	67
66	Rallies	69
67	Wallace	66
68	Murugappa Chettiar	29
69	Kanoria, R. K.	50
70	Jatia, G. D.	70

Source: Names of Industrial Houses are taken from the Report of the Industrial Licensing Policy Inquiry Committee, Appendices, Vol. II; rankings are made by asset share computed from Kothari's Investors' Handbook, various issues covering 1948-1968.

APPENDIX E

BASIC DATA RELATING TO 20 LARGEST FIRMS IN IN MAJOR INDIAN INDUSTRIES, 1968

Name of Firms (1)	Paid-up Capital & Reserves in 1968 (in rupees) (2)	Rank of Firms in 1948 (3)	Nature of Control[a] (4)
Cotton Textiles (comparable U.S. SIC Code: 2211,41,53-56)			
Century Spinning Mfg. Co. Ltd.	163,63,1241	9	LH-2
Kesoram Cotton Mills Ltd.	100,23,0188	12	LH-2
Madura Mills Co. Ltd.	83,70,4960	4	LH-24
Delhi Cloth & General Mills	80,000,000	5	LH-14
Bombay Dying & Mfg. Co. Ltd.	70,82,0667	2	LH-27
The Ahmedabad Mfg. Co. Ltd.	59,55,4538	14	LH-28
New Sharrock Spg. & Wvg. Co.	58,85,7369	82	LH-9
Jiyajieerao Cotton Mills Ltd.	57,11,8400	3	LH-2
Shri Ambica Mills Ltd.	54,86,1800	47	IF
The Buckingham & Cornatic Mills	54,59,5609	6	LH-25
Modi Spinning & Weaving Mill	53,84,3125	49	LH-32
Sutlej Cotton Mills Ltd.	45,52,1762	83	LH-2
Standard Mills Co. Ltd.	40,90,8788	39	LH-9
The Arvind Mills Ltd.	40,14,3311	22	LH-15
Mafatlal Fine Spinning Mills	38,30,5525	16	LH-9
Swadeshi Cotton Mills Ltd.	35,66,3028	7	LH-47
Shree Ram Mills Ltd.	30,42,5000	18	IF
Century Enka Ltd.	29,96,2100	N	IF
Svadeshi Mills Co. Ltd.	28,32,2268	11	LH-1
Khatsu Makanji Spg. Mills Ltd.	25,85,5425	23	LH-36
Total of 20 Firms	= 1,152,32,7573		
Total No. of Firms in 1968 = 363	Industry Totals in 1968 = 2,720,48,4154		Total No. of Firms Under Managing Agen. in 1968 = 188

[a]LH = Large Industrial House--1968 rank taken from Appendix D.

MA = Under the control of Managing Agencies--details available in Kothari's Handbook.

IF = Independent firm

[b]N = Nonexistent in 1948

APPENDIX E--Continued

Woolen Textiles (Comparable U.S. SIC Code: 2231,2283)			
(1)	(2)	(3)	(4)
Bangalore Woolen Mills Ltd.	34,63,4679	2	IF
Raymond Woolen Mills Ltd.	17,80,000	1	LH-6
Shree Digvijaya Woolen Mills Ltd.	9,08,5850	3	LH-2
Modella Woolen Mills Ltd.	8,61,9125	N	IF
Panipat Woolen Mills Ltd.	7,14,9559	7	MA
Hindustan Woolen Mills Ltd.	7,00,0000	4	LH-2
Bharat Woolen Mills Ltd.	5,23,4500	8	MA
Oriental Woolen Mills Ltd.	1,70,0000	5	IF
Bombay Woolen Mills Ltd.	1,40,0000	6	IF
G.R. Woolen Mills Ltd.	1,20,0000	10	IF
Oswall Woolen Mills Ltd.	1,18,6663	9	IF
Dhruva Woolen Mills Ltd.	90,0000	N	IF
Total of 12 Firms =	95,91,0376		
Total No. of Firms in 1968 = 12	Industry Totals in 1968 =	95,91,0376	Total No. of Firms Under Managing Agen. in 1968 = 5

APPENDIX E--Continued

Synthetic Textiles (Comparable U.S. SIC Code: 2221)			
(1)	(2)	(3)	(4)
Gwalior Rayon Mfg. Ltd.	165,22,2030	1	LH-2
J.K. Synthetics Ltd.	78,49,1211	5	LH-6
National Rayon Corp. Ltd.	68,89,3706	2	LH-19
South-India Rayon Ltd.	62,58,2312	N	LH-17
Baroda Rayon Corp. Ltd.	47,83,9175	N	LH-19
Indian Rayon Corp. Ltd.	33,40,8288	N	LH-2
Sirsilk Ltd.	31,20,0781	4	LH-2
Travancore Rayon Ltd.	24,86,5798	3	LH-49
Greater Mysore Rayon Ltd.	3,00,0000	N	IF
Amritsar Rayon Mills Ltd.	1,60,0000	6	IF
New Era Fabrics Ltd.	1,20,0000	N	IF
Total of 11 Firms =	518,30,3301		
Total No. of Firms in 1968 = 11	Industry Totals in 1968 =	518,30,3301	Total No. of Firms Under Managing Agen. in 1968 = 8

APPENDIX E--Continued

Jute Textiles (No U.S. Industry in Existence)			
(1)	(2)	(3)	(4)
The Birla Jute Mfg. Co. Ltd.	98,06,4661	10	LH-2
New Central Jute Mills Co.	40,96,6900	27	LH-10
Bengal Jute Mills Co.	39,80,7082	32	LH-11
Budge Budge Mills Ltd.	28,86,5854	18	LH-5
Fort Gloster Jute Mfg. Co. Ltd.	18,33,7712	3	LH-7
Ganges Mfg. Co. Ltd.	17,84,9146	5	LH-6
Hestings Mills Co.	17,55,0000	19	LH-7
Megna Mills Co.	16,08,1890	14	IF
Anglo-India Jute Mills Co.	14,65,4900	2	LH-33
Gowrepore Co. Ltd.	13,86,0000	13	LH-25
Agarpara Co. Ltd.	13,03,6000	9	LH-61
India Jute Co. Ltd.	13,01,1595	4	IF
Gondalpara Mills Ltd.	12,16,9524	44	LH-41
Champadany Jute Mills Co.	11,62,0054	1	LH-39
Delta Jute Mills Co. Ltd.	11,56,9714	33	LH-5
Hooghly Mills Co. Ltd.	11,04,2059	52	LH-41
Kinnisor Jute Mills Ltd.	10,61,1892	17	LH-23
Nuddea Mills Ltd.	10,04,9500	15	LH-25
Shree Ambica Jute Mills Ltd.	9,75,0000	22	IF
Standard Jute Col Ltd.	9,74,0000	36	LH-23
	Total of 20 Firms = 418,63,8483		
Total No. of Firms in 1968 = 62	Industry Totals in 1968 = 635,93,6270		Total No. of Firms Under Managing Agen. in 1968 = 50

APPENDIX E--Continued

Paper & Paper Pulp (Comparable U.S. SIC Code: 2611,2631)			
(1)	(2)	(3)	(4)
Orient Paper Mills Ltd.	108,24,0864	2	LH-2
Shree Gopal Paper Mills Ltd.	71,46,9621	4	LH-13
National Paper Mills Ltd.	60,03,5661	6	IF
Ballarpur Paper Mills Ltd.	54,73,2325	19	LH-13
Titagar Paper Mills Ltd.	54,21,9574	1	LH-23
The West Coast Paper Mills Ltd.	47,54,4500	N	LH-7
Sirpur Paper Mills Ltd.	43.78,0940	3	LH-2
Andhra Pradesh Paper Mills	40,00,0000	N	LH-7
Paper Corp. of India	36,27,6072	10	LH-8
Seshasayee Paper Ltd.	34,97,8750	N	LH-8
Star Paper Mills Ltd.	29,27,2567	8	MA
Bengal Paper Mills Ltd.	28,78,2826	5	LH-7
Central Pulp Mills Ltd.	26,21,5000	N	IF
Ashok Paper Mills Ltd.	21,64,5000	N	IF
Mandya National Paper Mills Ltd.	20,30,0000	N	IF
India Paper Pulp Co. Ltd.	15,31,7407	7	LH-5
Mysore Paper Mills Ltd.	12,35,7348	9	IF
Paper Products Ltd.	11,65,5071	18	IF
Punalpur Paper Mills	7,12,1648	17	LH-24
Associated Pulp & Paper Mills	4,99,9750	N	IF
	Total of 20 Firms = 728,94,2424		
Total No. of Firms in 1968 = 43	Industry Totals in 1968 = 768,38,3652		Total No. of Firms Under Managing Agen. in 1968 = 20

APPENDIX E--Continued

Cement (Comparable U.S. SIC Code: 3241)			
(1)	(2)	(3)	(4)
Associated Cement Co. Ltd.	373,76,8709	1	LH-4
Jaipur Udyog Ltd.	53,24,7923	3	LH-10
India Cements Ltd.	47,86,9278	7	MA
Orissa Cement Ltd.	44,08,4115	N	LH-20
Ragalkot Cement Co.	39,96,5875	14	MA
Shree Digvijay Cement Co.	35,77,5392	5	LH-7
Saurashtra Cement Industries Ltd.	35,56,8724	N	IF
Dalmia Cement (Bharat) Ltd.	32,06,2200	N	LH-20
Rohtas Industries Ltd.	30,47,7970	4	LH-10
Mysore Cements Ltd.	30,11,8925	N	LH-2
Panyam Cement Industries Ltd.	23,24,3287	N	MA
Dalmia Cement Ltd.	21,07,5000	2	LH-20
Asbestor Cement Ltd.	18,50,0000	15	LH-4
Madras Cements Ltd.	18,18,2779	N	IF
Kalyanpur Cement Works	16,30,6324	12	IF
Ashoka Cement Ltd.	11,22,8387	N	LH-10
Andhra Cement Co. Ltd.	11,03,7130	9	LH-40
Sone Valley Portland Cement Ltd.	9,95,0000	8	LH-7
Travancore Cements Ltd.	6,08,4993	10	IF
Assam Bengal Cement Co.	5,12,1688	11	LH-35
Total of 20 Firms =	845,48,5920		
Total No. of Firms in 1968 = 24	Industry Totals in 1968 =	857,16,3523	Total No. of Houses Under Managing Agen. in 1968 = 16

APPENDIX E--Continued

Sugar (Comparable U.S. SIC Code: 2062)			
(1)	(2)	(3)	(4)
Walchandnagar Industries	46,93,7422	2	LH-12
E.L.D. Perry Ltd.	40,00,0000	1	LH-30
K.P.C. Ltd.	38,75,3348	18	LH-40
Nizam Sugar Factory Ltd.	34,19,3396	3	IF
Upper Ganges Sugar Mills Ltd.	21,13,3493	16	LH-2
Mohan Meakin Mills Ltd.	20,05,0000	15	IF
Kopargaon Sahakari Sakkar Ltd.	19,06,5099	N	IF
Maharashtra Sugar Mills Ltd.	16,45,1950	38	IF
Modi Sugar Mklls Ltd.	16,00,0000	6	LH-32
Andhra Sugars Ltd.	15,09,6562	23	MA
Carea & Co. Ltd.	15,08,5327	14	IF
Hindustan Sugar Mills Ltd.	14,90,0000	7	LH-21
Saraswati Industrial Syndicate	14,89,5600	19	IF
Premier Sugar Mills Ltd.	14,80,0000	22	IF
Anil Starch Products Ltd.	14,09,8908	17	LH-15
Phaltan Sugar Works Ltd.	13,78,0000	11	LH-9
South India Sugars Ltd.	12,80,0000	20	IF
India Sugar & Refineries Ltd.	12,13,8067	26	MA
Godavari Sugar Mills Ltd.	11,85,0950	12	MA
Ganga Sugar Corp. Ltd.	11,69,6634	33	IF
	Total of 20 Firms = 403,72,6956		
Total No. of Firms in 1968 = 122	Industry Totals in 1968 = 907,10,4495		Total No. of Firms Under Managing Agen. in 1968 = 68

APPENDIX E--Continued

Vegetable Oil (Comparable U.S. SIC Code: 2091-93)			
(1)	(2)	(3)	(4)
Hindustan Level Ltd.	32,50,0000	2	IF
Tata Oil Mills Co. Ltd.	28,20,0000	3	LH-1
Amrit Banaspati Co.	14,50,2524	1	MA
Swastik Oil Mills Ltd.	10,01,5405	8	LH-28
D.C.M. Works Ltd.	6,00,0000	7	LH-14
Indian Vegetable Products Co.	5,31,1687	4	LH-1
Malwa Vanaspati & Chamicals Lts.	5,10,0000	5	MA
East Asiatic Co. Ltd.	5,00,0000	12	IF
Kusum Products Ltd.	3,90,0000	10	LH-2
Tungabhadra Industries Ltd.	3,75,8950	6	LH-2
Madhusudan Vegetable Products Co.	2,50,0000	23	IF
Bhavnagar Vegetable Products Ltd.	2,49,9375	16	IF
Vegetable Products Ltd.	2,39,0345	N	MA
Madras Vanaspati Ltd.	2,32,5578	15	IF
East Coast Food Products Ltd.	2,09,6812	14	IF
Western India Vegetable Products	1,89,0200	20	IF
Rampur Industries Ltd.	1,20,0000	22	IF
Karnatak Vegetable Oils Ltd.	1,01,2782	17	IF
J.K. Oil Mills Co. Ltd.	68,0189	25	LH-6
Kalpana Oil Mills Ltd.	53,5811	24	IF
Total of 20 Firms =	129,09,4080		
Total No. of Firms in 1968 = 23	Industry Totals in 1968 =	132,39,9635	Total No. of Firms Under Managing Agen. in 1968 = 12

APPENDIX E--Continued

Glass
(Comparable U.S. SIC Code: 3211-31)

(1)	(2)	(3)	(4)
Hindustan-Pilkington Glass Works	23,95,0529	N	LH-53
Alembic Glass Industries Ltd.	20,72,1500	2	LH-34
Hindustan-National Glass Mfg. Co.	17,00,9741	4	IF
Bososil Glass Works Ltd.	16,25,1000	6	IF
Bombay Glass Works Ltd.	15,94,1485	N	IF
Shree Vallabh Glass Wroks Ltd.	7,60,3555	N	IF
Hindustan Wired Glass Mfg. Co.	6,00,0000	N	IF
Window Glass Ltd.	3,49,0625	N	IF
Ogale Glass Works	3,46,2735	3	MA
Mrishna Glass Works Ltd.	2,10,0000	7	IF
Shree Gobinddeo Glass Works Ltd.	1,68,0500	5	MA
Trivancore Ogale Glass Mfg. Co.	1,07,6453	N	IF
Hindustan Vacuum Glass Ltd.	96,4572	N	LH-14
Dholpur Glass Works Ltd.	71,0205	9	IF
South India Glass Works Ltd.	59,0000	10	IF
Mysore Glass Works Ltd.	35,0000	8	IF
Glass Pressedwares Ltd.	19,7553	N	IF
Shiva Glass Works Ltd.	7,1000	N	IF
Total of 18 Firms =	122,17,1453		
Total No. of Firms in 1968 = 18	Industry Totals in 1968 =	122,17,1453	Total No. of Firms Under Managing Agen. in 1968 = 5

APPENDIX E--Continued

Rubber (Comparable U.S. SIC Code: 3011-31)			
(1)	(2)	(3)	(4)
The Dunlop (India) Rubber Co.	163,58,3032	1	IF
Goodyear India Ltd.	71,54,7444	2	IF
Ceat Tires of India Ltd.	54,75,1345	N	LH-1
Madras Rubber Factory Ltd.	28,97,1788	N	MA
Premier Tyres Ltd.	27,10,5893	N	MA
National Rubber Mfg. Ltd.	17,13,2348	3	IF
Inchek Tyres Ltd.	13,40,1845	N	MA
Swastik Rubber Products Ltd.	8,06,4608	5	IF
National Standard Duncan Ltd.	4,98,7000	N	IF
Indian Rubber Regenerating Co.	2,61,3875	N	LH-45
Associated Rubber Industries Ltd.	2,26,0638	6	IF
Indian Rubber Mfg. Ltd.	2,23,9370	4	LH-65
Ruby Rubber Works Ltd.	1,83,4315	N	MA
Travancore Rubber Works Ltd.	1,54,8315	8	IF
Nanco Rubber Ltd.	90,0000	N	IF
National India Rubber Works	65,5350	9	IF
Ruby Rubber Works (Bangalore) Ltd.	60,0000	7	IF
Ruby Rubber (Madras) Ltd.	55,7335	N	MA
Total of 18 Firms =	402,74,9101		
Total No. of Firms in 1968 = 18	Industry Totals in 1968 = 402,74,9101		Total No. of Firms Under Managing Agen. in 1968 = 7

APPENDIX E--Continued

Tools & Instruments (Comparable U.S. SIC Code: 3541-44,3811-41)			
(1)	(2)	(3)	(4)
Indian Steel and Wire Products Ltd.	53,75,6018	1	LH-35
Carborundum Universal Ltd.	17,96,2000	N	LH-29
New Standard Engineering Co.	17,32,3765	N	IF
Praga Tools Ltd.	16,00,0000	2	IF
Kirloskar Pneumatic Corp. Ltd.	15,45,4569	N	LH-16
Mysore Kirloskar Ltd.	14,44,7018	6	IF
Indian Tool Manufacturing Ltd.	14,00,0000	N	LH-2
Sandvik Asia Ltd.	9,00,0000	N	IF
Industrial Plants Ltd.	7,50,0000	N	LH-2
Fit Tight Nuts & Bolts Ltd.	7,19,4300	N	IF
The Scottish India Machine Tools Ltd	6,40,0000	N	IF
Beco Engineering Co. Ltd.	6,01,7415	N	IF
Engel India Machine Tools Ltd.	4,56,8780	N	IF
Abrasives & Casting Ltd.	4,29,0898	N	IF
The Indian Tack & Nail Co. Ltd.	4,00,0000	N	LH-41
Addison & Co. Ltd.	4,00,0000	4	LH-46
Micro Tools Ltd.	3,99,6250	N	IF
Hindustan Dowidat Tools Ltd.	3,82,2552	N	IF
Grindwell Abrasives Ltd.	3,70,0000	7	MA
Consolidated Pneumatic Tools Co. Ltd.	3,39,3000	N	IF
	Total of 20 Firms = 216,82,6565		
Total No. of Firms in 1968 = 36	Industry Totals in 1968 = 250,32,8733		Total No. of Firms Under Managing Agen. in 1968 = 11

APPENDIX E--Continued

Industrial Machineries (Comparable U.S. SIC Code: 35)			
(1)	(2)	(3)	(4)
ACC-Vickers Babcock Ltd.	65,40,0000	N	LH-4
Larson & Toubro (India) Ltd.	54,96,8069	4	IF
Kirloskar Brothers Ltd.	38,05,3122	5	LH-16
Textile Machinery Corp. Ltd.	36,98,3505	2	LH-2
Utkal Machinery Ltd.	33,50,0000	N	MA
National Machinery Mfg. Ltd.	29,11,9709	1	IF
Lakshmi Machine Works Ltd.	24,23,1750	N	LH-17
Central India Machinery Mfg. Co.	22,86,5358	3	LH-2
Britannia Engineering Co.	15,77,6800	9	LH-11
Machinery Manufacturing Corp. Ltd.	15,66,7316	6	LH-18
Textool Company Ltd.	10,42,9966	15	LH-2
Khandelwal Udyog Ltd.	10,24,4842	N	IF
Elecon Engineering Co. Ltd.	9,55,3738	N	IF
T. Maneklal Mfg. Co. Ltd.	8,65,0967	11	MA
Andhra Foundry & Machine Co. Ltd.	7,20,9280	N	MA
McNally-Bird Engineering Co.	6,71,4000	7	LH-25
Lynx Machinery Ltd.	6,24,0746	N	IF
Star Textile Engineering Works Ltd.	5,67,4566	N	IF
CTR Manufacturing Industries Ltd.	5,42,2250	N	IF
Indequip Engineering Ltd.	5,24,4164	N	IF
	Total of 20 Firms = 401,52,0182		
Total No. of Firms in 1968 = 37	Industry Totals in 1968 = 444,24,9010		Total No. of Firms Under Managing Agen. in 1968 = 14

APPENDIX E--Continued

Automobiles & Ancillaries (Comparable U.S. SIC Code: 3713-15, 17, 41-48, 51)			
(1)	(2)	(3)	(4)
Hindustan Motors Ltd.	219,89,6070	1	LH-2
TELCO Ltd.	208,57,6410	3	LH-1
Premier Automobile Ltd.	81,60,0912	2	LH-12
Ashok Leyland Ltd.	63,87,9978	5	IF
Mahindra & Mahindra Ltd.	51,64,9945	4	LH-18
Escorts Ltd.	47,30,5972	6	MA
Simpson & Co. Ltd.	45,92,9983	9	LH-46
Kirloskar Automobile Ltd.	32,92,3852	7	LH-16
Lucas TVS Ltd.	26,20,0000	N	LH-37
Kirsoskar Cummings	19,84,9352	N	LH-16
Industrial Tractor Co. of India	19,25,9420	N	LH-18
Standard Motor Products Ltd.	17,84,4449	12	MA
Sankey Wheels Ltd.	17,77,7250	N	IF
Bajaj Auto Ltd.	17,76,4939	14	LH-21
Automobile Products of India	16,97,8206	N	MA
Wheels India Ltd.	13,19,3300	N	LH-21
Bajaj Tempo Ltd.	12,50,8470	N	IF
Slm-Maneklal Industries Ltd.	12,22,4600	N	LH-21
Tractors (India) Ltd.	10,92,3699	8	IF
Enfield India Ltd.	10,05,4904	N	IF
	Total of 20 Firms = 928,49,6262		
Total No. of Firms in 1968 = 41	Industry Totals in 1968 = 1,020,24,9859		Total No. of Firms Under Managing Agen. in 1968 = 21

APPENDIX E--Continued

Electrical Engineering (Comparable U.S. SIC Code: 35)			
(1)	(2)	(3)	(4)
Voltas India Ltd.	83,69,0976	N	LH-1
Phillips India Ltd.	75,47,5000	2	IF
Indian Cable Corp. Ltd.	74,57,3324	1	IF
Union Electric Corp. Ltd.	42,50,0000	3	IF
Kirloskar Electric Co. Ltd.	37,55,3778	12	LH-16
Crompton Greaves Ltd.	33,00,0000	N	LH-13
Cable Corporation of India	32,97,3548	N	LH-36
The National Insulated Cable Corp.	31,26,9456	5	IF
Electric Construction & Equipment	30,50,7575	9	LH-2
English Electric Co. of India	28,87,6160	N	IF
Associated Electrical Ind. Ltd.	23,49,3661	N	IF
Asian Cable Corp. Ltd.	20,23,1075	N	LH-33
Bharat Bijlee Ltd.	13,62,0961	8	IF
Bajaj Electricals	13,37,0191	4	LH-21
Universal Cables Ltd.	13,25,9550	N	LH-2
Air Control Engineering Ltd.	12,26,9402	13	IF
Mysore Electrical Industries Ltd.	12,17,4420	21	IF
W.S. Insulators of India Ltd.	11,00,0000	N	MA
Henley Cables India Ltd.	10,77,4979	N	IF
Jyoti Ltd.	10,08,4000	19	LH-34
Total of 20 Firms =	610,69,8056		
Total No. of Firms in 1968 = 71	Industry Totals in 1968 =	849,33,7511	Total No. of Firms Under Managing Agen. in 1968 = 24

APPENDIX E--Continued

Mechanical Engineering (Comparable U.S. SIC Code: 34)			
(1)	(2)	(3)	(4)
Indian Tube Corp. Ltd.	120,74,2725	N	LH-1
Metal Box Company of India	91,98,2719	4	IF
Guest, Keen, Williams, Ltd.	76,83,5913	1	IF
Jesop & Co. Ltd.	63,84,8543	6	LH-10
Tube Investments of India Ltd.	59,53,7394	N	LH-29
Associated Bearing Corp.	40,25,7996	N	IF
National Engineering Industries Ltd	39,40,2119	2	LH-2
Jay Engineering Works Ltd.	36,08,4941	18	LH-14
Hindustan Brown Boveri Ltd.	29,32,0000	8	IF
Burn & Co. Ltd.	27,23,3365	3	LH-3
Remington Rank of India Ltd.	25,96,6716	N	IF
Kalinga Tubes Ltd.	24,05,9400	N	IF
Braithwaite & Co. Ltd.	23,07,0065	9	LH-42
Cooper Engineering Ltd.	21,82,8542	17	LH-12
Zenith Steel Pipes Ltd.	21,82,2012	N	LH-2
Indian Standard Wagon & Co.	20,94,3499	11	LH-3
Richardson & Cruddas Ltd.	18,69,4293	N	IF
Kamani Engineering Co. Ltd.	18,43,1547	7	LH-45
Atlas Cycle Industries Ltd.	18,42,0964	N	IF
Sen Raleigh Ltd.	18,38,2845	N	IF
Total of 20 Firms =	796,22,5598		
Total No. of Firms in 1968 = 103	Industry Totals in 1968 = 1,218,17,8169		Total No. of Firms Under Managing Agen. in 1968 = 47

APPENDIX E--Continued

Metallurgical Industry (Comparable U.S. SIC Code: 33)			
(1)	(2)	(3)	(4)
Tata Iron & Steel Co. Ltd.	1,002,22,4229	1	LH-1
Indian Iron & Steel Co. Ltd.	623,52,8796	2	LH-3
Indian Aluminum Corp. Ltd.	252,63,0387	3	LH-5
Hindustan Aluminum Co. Ltd.	124,20,3971	N	LH-2
The Madras Aluminum Co. Ltd.	59,77,7375	N	LH-31
Indian Copper Corp. Ltd.	45,41,7204	4	LH-41
Aluminum Corporation of India	37,69,7124	5	LH-6
Mahindra Ugine Steel Co. Ltd	36,48,3275	N	LH-18
Aluminim Industries Ltd.	33,44,5600	19	LH-8
Mukund Iron & Steel Works Ltd.	32,61,5263	7	LH-21
India Pipe Co. Ltd.	31,73,5055	6	LH-12
Khandewal Ferro Alloys Ltd.	25,24,3474	N	MA
Metal Corporation of India	25,00,0000	11	IF
Ferro Alloys Corp. Ltd.	24,14,6365	N	MA
Bharat Forge Co. Ltd.	23,00,0000	N	LH-16
Bharat Steel Tubes Ltd.	14,96,9000	N	IF
Electro Steel Castings Ltd.	13,49,1166	N	LH-20
Calcutta Steel Co. Ltd.	13,41,0000	N	IF
Devidawal Tube Industries Ltd.	13,06,6815	N	IF
Indian Smelting & Refining	12,13,4000	14	LH-2
	Total of 20 Firms = 2,444,21,9099		
Total No. of Firms in 1968 = 61	Industry Totals in 1968 = 2,564,57,7077		Total No. of Firms Under Managing Agen. in 1968 = 31

APPENDIX E--Continued

Alkalies & Allied Chemicals (Comparable U.S. SIC Code: 2812-13)			
(1)	(2)	(3)	(4)
Indian Chemicals Ltd.	96,51,1188	1	IF
Tata Chemicals Ltd.	56,56,0465	2	LH-1
Atul Products Ltd.	50,70,0370	3	LH-15
Dhrangadhra Chemical Works	49,69,8000	7	LH-38
Alkali & Chemical Corp. of India	46,70,1500	4	LH-22
The Mettur Chemical & Indis. Corp.	35,67,0000	6	LH-8
Dharamji Morarji Co. Ltd.	25,14,1821	10	IF
Asiatic Chemicals Ltd.	23,00,3412	9	LH-11
Travancore-Cochin Chemicals Ltd.	22,83,3500	N	IF
Bombay Chemicals Ltd.	14,93,4750	N	LH-44
Kanoria Chemicals & Industrials Ltd	12,06,5318	N	LH-50
J.K. Chemicals Ltd.	12,06,5300	5	LH-6
D.C.M. Chemical Works	8,00,0000	8	LH-14
Barium Chemicals Ltd.	7,07,5936	N	IF
The Botanium Ltd.	7,00,0000	N	LH-27
National Peroxide Ltd.	6,37,9269	N	LH-27
Albright, Morarji & Pandit Ltd.	6,19,5350	N	IF
Travancore Chemical & Mfg. Co. Ltd.	6,15,6309	15	IF
Everest Chemical Co.	5,99,2000	N	MA
Associated Industries Ltd.	5,99,0826	N	IF
	Total of 20 Firms = 498,67,5314		
Total No. of Firms in 1968 = 40	Industry Totals in 1968 = 555,68,3969		Total No. of Firms Under Managing Agen. in 1968 = 21

APPENDIX E--Continued

Fertilizers (Comparable U.S. SIC Code: 2844)			
(1)	(2)	(3)	(4)
Madras Fertilizers	136,46,8000	N	IF
Gujarat State Fertilizers Co.	119,67,8090	N	IF
Coromondel Fertilizer Ltd.	95,82,0101	N	IF
Fertilizers & Chemicals Ltd.	77,41,1223	1	LH-8
Shaw Wallace & Co. Ltd.	7,00,0000	2	LH-63
E.I.D. Perry (Fertilizer) Ltd.	6,50,9573	3	LH-30
Phosphate Company Ltd.	6,04,4526	N	LH-7
Adarsh Fertilizers Ltd.	5,86,6187	N	MA
West India Ltd.	4,16,2250	N	MA
Premier Fertilizers Ltd.	3,50,2470	N	LH-49
Bharat Fertilizers Ltd.	3,07,2386	N	MA
Chamundi Chemicals & Fertilizers	2,89,2974	N	MA
Coimbatore Pioneer Fertilizers Ltd.	2,18,1530	N	MA
Hyderabat Chemicals & Fertilizers	1,56,2978	5	IF
Mysore Chemicals & Fertilizers Ltd.	1,48,1220	4	IF
Mico Farm Chemicals Ltd.	47,4800	N	IF
Chember Bone & Fertilizer Co.	45,0000	N	MA
Coimbatore Chemicals & Fertilizers	31,3700	7	IF
Nilgiri Fertilizers Ltd.	21,4810	6	IF
	Total of 19 Firms = 475,10,6818		
Total No. of Firms in 1968 = 19	Industry Totals in 1968 = 475,10,6818		Total No. of Firms Under Managing Agen. in 1968 = 11

APPENDIX E--Continued

Organic Chemicals (Comparable U.S. SIC Code: 2818)			
(1)	(2)	(3)	(4)
National Organic Chemical Ind. Ltd.	99,96,1900	N	IF
Union Carbide (India) Ltd.	49,36,1249	1	IF
Associated Battery Makers Ltd.	24,53,3200	2	IF
India Carbon Ltd.	23,84,5181	N	IF
Somaiya Organics	9,40,0000	N	IF
Indian Organic Chemicals Ltd.	9,02,7123	N	IF
Paul Lohman (India) Ltd.	8,63,7677	N	IF
Indian Turpentine & Rosin Co.	8,23,9456	3	IF
Camphor & Allied Products Ltd.	8,20,0000	N	MA
Citric India Ltd.	7,97,3500	N	IF
Herdillia Chemicals Ltd.	3,78,9940	N	LH-30
Leiner-Knit Co.	2,46,2000	N	IF
Trichy Chemicals Ltd.	1,99,4750	N	IF
Narang Industries Ltd.	1,51,0373	5	MA
Periyar Chemicals	55,8335	N	IF
Trupentine Chemicals Ltd.	28,7800	N	IF
Techno-Chemical Industries Ltd.	23,8058	4	IF
	Total of 17 Firms = 260,02,0542		
Total No. of Firms in 1968 = 17	Industry Totals in 1968 = 260,02,0542		Total No. of Firms Under Managing Agen. in 1968 = 3

APPENDIX E--Continued

Plastic Chemicals (Comparable U.S. SIC Code: 2851)			
(1)	(2)	(3)	(4)
Synthetics & Chemicals Ltd.	57,43,2795	N	LH-26
Chemicals & Fibres of India	54,92,9380	N	LH-22
Mysore Acetate & Chemicals Ltd.	27,16,2525	N	IF
Nirlon Synthetic Fibres & Chemicals	21,00,0000	N	IF
Polychem Ltd.	20,16,7264	N	LH-26
Hindustan Polymers Ltd.	19,90,3675	N	IF
East Anglia Plastics Ltd.	19,13,2476	N	IF
East India Plastics Ltd.	18,30,0087	N	IF
Chemicals & Plastics of India	17,50,0000	N	MA
Indian Plastics Ltd.	5,47,5258	1	LH-2
Cellulose Products of India	4,96,6297	N	IF
Indofil Cehmicals Ltd.	4,50,5875	N	IF
India Linoleum Ltd.	3,35,3000	2	LH-2
Reichold Chemicals India Ltd.	3,07,6000	N	IF
Indoplast Ltd.	1,00,0000	3	IF
Synthetic Moulders Ltd.	68,6678	4	IF
Total of 16 Firms =	278,59,1310		
Total No. of Firms in 1968 = 16	Industry Total in 1968 = 278,59,1310		Total No. of Firms Under Managing Agen. in 1968 = 6

APPENDIX E--Continued

Dyes (Comparable U.S. SIC Code: 2851)			
(1)	(2)	(3)	(4)
Indian Dyestuff Ltd.	41,17,1501	N	LH-9
Colour-Chem Ltd.	38,37,5519	N	IF
Atic Industries Ltd.	20,00,0000	N	IF
Amar Dye-Chem Ltd.	19,18,9742	N	MA
Arlabs Ltd.	6,16,8947	1	IF
United Dyestuff Ltd.	4,70,5900	N	IF
Hoechst Dyes & Chemicals	2,00,0000	N	LH-9
Keyto Chemicals Ltd.	73,3125	N	IF
Indequip Chemdyes Ltd.	50,5331	N	IF
Asia Chemicals Ltd.	50,0000	2	IF
Total of 20 Firms =	133,35,0065		
Total No. of Firms in 1968 = 10	Industry Totals in 1968 = 133,35,0065		Total No. of Firms Under Managing Agen. in 1968 = 3

APPENDIX E--Continued

Drugs & Pharmaceuticals (Comparable U.S. SIC Code: 2834)			
(1)	(2)	(3)	(4)
Pfizer India Ltd.	61,5611050	N	IF
Bayer (India) Ltd.	40,87,4332	N	IF
Alembic Chemical Works Ltd.	31,76,3249	2	LH-34
East India Pharmaceutical Works	27,26,4463	11	MA
Sandoz (India) Ltd.	21,47,2590	4	IF
Bengal Chemical & Pharma. Ltd.	14,87,0236	1	IF
Warner-Hindustan Ltd.	13,04,7900	N	IF
Boots Pure Drug Co. Ltd.	10,96,4741	5	IF
Tata Fison Industries Ltd.	9,76,2000	N	IF
Unichem Laboratories Ltd.	8,92,1515	N	IF
Standard Pharmaceuticals	8,00,0000	9	LH-28
Calcutta Chemicals Ltd.	5,72,8796	12	IF
Smith, Stanistreet & Co.	5,42,7151	14	LH-59
Crookers Interfran Ltd.	5.00,2254	N	IF
Geoffrey Manners (India) Ltd.	5,00,0000	7	IF
Bathgate & Co.	3,00,0000	3	MA
Chemical Industries & Pharma. Ltd.	2,80,0653	13	MA
Zandu Pharmaceuticals	2,77,6819	6	MA
Chemo-Pharma Lab.	2,72,8537	17	MA
Amrutanjan Ltd.	2,00,0000	15	MA
Total of 20 Firms =	282,96,6286		
Total No. of Firms in 1968 = 39	Industry Total in 1968 = 292,43,5511		Total No. of Firms Under Managing Agen. in 1968 = 12

Source: Data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

APPENDIX F

TOTAL NUMBER OF FIRMS IN 22 INDIAN INDUSTRIES IN SELECTED YEARS, 1948-1968

Name of Industry	1948	1953	1958	1963	1968
Cotton Textile	276	286	326	355	363
Woolen Textile	10	11	11	12	12
Synthetic Textile	7	8	10	12	11
Jute Textile	73	71	70	65	62
Paper	24	23	27	43	43
Cement	18	20	23	22	24
Sugar	98	100	119	120	122
Vegetable Oil	29	32	29	23	23
Glass	12	14	14	17	18
Rubber	9	10	14	18	18
Tools & Instruments	11	16	21	30	36
Industrial Machineries	18	18	19	34	41
Automobile & Ancillaries	16	17	23	34	41
Electrical Engineering	31	35	45	67	71
Mechanical Engineering	43	51	64	101	103
Metallurgical Industry	25	26	37	58	61
Alaklies & Allied Chem.	17	18	27	39	40
Fertilizers	7	9	10	17	19
Organic Chemicals	5	5	6	14	17
Plastic Chemicals	4	4	8	15	16
Dyes	2	2	7	10	10
Drugs & Pharmaceuticals	28	32	33	38	39
Total	763	808	943	1144	1187

Source: Data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

APPENDIX G

MATRICES OF CORRELATION COEFFICIENTS FOR THE MULTIPLE REGRESSION EQUATION WITH PERCENTAGE CHANGES IN ASSETS AND NUMBER OF FIRMS AS INDEPENDENT VARIABLES IN 22 INDIAN INDUSTRIES 1948-1968

	1948-1968		
	Δ AS	Δ NF	ΔC_4
ΔAS[a]	1.000	.509	-.670
ΔNF[b]	.509	1.000	-.654
ΔC_4[c]	-.670	-.654	1.000
	1953-1968		
Δ AS	1.000	.486	-.675
Δ NF	.486	1.000	-.596
ΔC_4	-.675	-.596	1.000

[a]Percentage change in assets ("growth variable").

[b]Percentage change in the number of firms.

[c]Change in 4-firm concentration ratios.

Source: Basic data collected from Kothari's Economic Guide and Investors' Handbook of India, various issues covering 1948-1968.

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