GROWTH AND PERFORMANCE OF PUBLIC SECTOR IN INDIAN ECONOMY : A REVIEW OF SELECTED ASPECTS

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INTRODUCTION

In this study we review the growth and performance of the public sector in the Indian economy. The development and expansion of public sector was a major strategic objective behind the policy adopted by the Government of India in order to achieve rapid industrialization and the transformation and modernization of the economic structure. An analysis of its growth and performance would therefore be important and useful in several respects. Such a subject is, however, vast in its scope and complex in its dimensions. We have accordingly restricted ourselves to only some selected aspects of its role and performance in the Indian economy.

The literature available on the public sector in India includes a large number of studies which variously deal with the organizational, administrative and managerial aspects of the functioning of the public sector. This includes problems such as accountability, forms of control and organization, autonomy of management, balance between autonomy and accountability, etc. A review of these studies is not however our principal concern here. Instead we present a summary of the essential elements of the organizational characteristics of the public sector.

In brief terms, the study seeks to analyse the size and role of the public sector in quantitative terms and assess its efficiency and performance with selected indicators. The role and performance of the public sector are reviewed with the help of existing studies available on the subject and from various other sources of data and information.

While reviewing the growth and share of the public sector in various sectors of the economy, we have used National Accounts Statistics (NAS), Monthly Statistical Abstract (MAS) and Transactions of Public Sector (TPS) published by the Central Statistical Organization (CSO). For the analysis of the size and share of the public sector in the manufacturing sector, we have mostly used data published by the Bureau of Public Enterprises (BPE). We also present our estimates of per employee value added at constant prices in the public sector by major industry groups. On the other hand the review of the role of the public sector in railways and electricity is based on data and analysis derived from Plan documents and committee reports.

Also, a comparison of the public sector and the private sector in terms of financial ratios, has been attempted with the help of Financial Statistics of Large Private Corporate Companies and Central and State Government Companies compiled from surveys conducted by the

Reserve Bank of India. The analysis of the state of affairs in capacity-utilization is largely based on the data derived from BPE reports and Reports of the Committee on Public Undertakings (COPU).

We must however point out that the data available on various aspects of the public sector have several limitations. Consequently, it is not possible to analyse the size and share of the public sector at a more disaggregate level. It is also not easy to combine ASI data (which follows National Industrial Classification) with BPE data. Data on capacity utilization also suffers from other limitations and deficiencies which we have pointed out in our investigation.

Our plan in this work is as follows: we open with a brief discussion on the necessity and evolution of the public sector in particular. This is followed by a synoptic review of organizational forms, control systems, and the special type of administrative and business environment that exists in public sector enterprises.

Against this background of policy and organizational structure, we present in the second chapter, a macro-level review of the public sector in the Indian economy since the last two decades (1960-1980). In addition, we review in a slightly more elaborate manner, its role and performance in manufacturing, electricity and railways.

Following this macro-review of the public sector, we present a brief discussion on certain problems and elements of pricing policy in the public sector. However, it is not our intention here to discuss various theories or individual industry-wise studies, but to merely indicate certain common principles and problems.

We later return to review the performance of the public sector enterprises in the manufacturing sector with the help of selected important indicators, i.e. financial ratios, capacity-utilization, factor-productivity, and its role in technological development. A part of this discussion is based on studies available, while the rest is based on data and information derived from various official sources and reports.

CHAPTER I

EVOLUTION, POLICY AND ORGANIZATION FRAMEWORK

1.1 Evolution of Public Sector

There are various reasons for the establishment of public enterprises. Firstly, in the case of public goods and industries with economies of large scale or decreasing long-run cost conditions (implying natural monopoly), the private ownership-based competitive market mechanism fails to provide an optimal solution. Under such conditions, a representative body like the government, will have to intervene to correct market failures, not only through taxation or regulation, but also by establishing its own enterprises producing and distributing goods and services.[1]

A characteristic of certain industries, particularly those producing essential public utilities, is that the basic size of the plant is very large compared to the size of the market, or, its elaborate system of production and distribution involves heavy capital costs. Therefore, any duplication of such equipment-investment through competition, would imply under-utilization and wastage of resources. Thus, it is better to have a monopoly rather than competition in these areas. If private monopolies are allowed to operate under these conditions, a potential source of exploitation is created. To avoid or to curb such exploitation, the

regulation and control of such a monopoly would become necessary to an extent where outright public ownership would appear as the most logical outcome. On the other hand, there would be existing private monopolies that may be economically and technically efficient, but these pose a potential threat of exploitation - political or social, if not economic - and these need to be substituted by public monopolies. In the first case, public ownership is meant as a means for preventing private monopoly; in the second case, it is meant for abolishing it. This is, in essence, what Crosland refers to as the 'public utility and monopoly argument'.[2] Moreover there are certain industries with strong backward and forward linkages and therefore of crucial importance. Any weakness, failure, inadequacy or breakdown in their production and prices, would be a matter of immense public concern. Hence they need to be under public ownership. In the literature available, this is commonly known as "basic industry argument" for the public sector.[3]

Among the reasons and arguments mentioned above, the 'essential nature of industry' or its 'strategic position' have often been emphasized. As far as operational efficiency is concerned, it presupposes economies of large scale organization of production and its more efficient conduct under a monopoly-type ownership.

In Marxist or socialist thought, the above arguments

are blended with still other arguments coupled with ideological presuppositions. In the Marxian perspective, the continued existence of competitive conditions is considered untenable due to the intrinsic tendency of concentration and centralization of capital. Large scale production and monopolization are therefore unavoidable consequences of modern production, particularly generalized commodity production of the capitalist type. Accordingly, "... the choice today is no longer between competition and monopoly but between monopoly capitalism and socialism (i.e. public ownership)."[4] Similarly it is argued, that under capitalism, the profit motive and the national interest would always be in conflict. Elimination of such a basic conflict would be possible only through public ownership and centralized planning.[5]

Other historical and social reasons have been cited with specific reference to the underdeveloped countries as historical inertia, acquisition of economic and political power by power groups or the bureaucracy, ideological predilections and pragmatic responses to economic problems.[6] In practice, there is a mixture of all these elements. Yet the so-called 'basic industry' and 'public utility' arguments are common and dominant in the literature in all countries. In most countries, irrespective of their level of development, and irrespective of their strategy and ideology of development, various activities or areas such as roads, road and

rail transport, electricity generation, defence, and often defence production, and similar infrastructural facilities or public utilities rest with public sector enterprises.

In the less developed and less industrialized countries, the public sector acquires some additional dimensions. Most of these countries face severe capital scarcity, very low level of basic good industries and infrastructural facilities, and a very narrow base of entrepreneurial, managerial and technical skills. In such circumstances the limitations of the private sector become obvious. This is not because private investment is intrinsically undesirable, but merely that it is not available. Thus, development and industrialization cannot rely on private effort alone. Under these conditions public sector investment becomes necessary both to initiate and keep going the process of development.

1.2 Public Sector After Independence

In the post-independence literature in India, all these elements and arguments appear in varying degrees of emphasis and explicitness, and supplemented by notions of social justice and socialism and by the historically inherited public industries. The public sector as a strategy for industrialization and development in specifically desired branches, sectors, and directions, has been a dominant theme in policy. In what follows, we shall proceed to review it briefly.

With the objective of establishing a socialistic

pattern of society and planning as the strategy to attain it, the Government of India emphasized and adopted the growth and expansion of the public sector as the basic strategy of industrialization, self-reliance, and development. It was spelt out in the Industrial Policy Resolution of 1948.[7] The resolution demarcates spheres of industrial activity into those which would be reserved for the government and those in which non-governmental activity would be permissible. For this purpose, it outlined four categories of industries: (1) Industries with exclusive government monopoly e.g. manufacture of arms and ammunition, atomic energy, railways and communication, (2) Industries in which new enterprises will be established only by the government e.g. steel, (3) Those industries in which the government finds it necessary to plan, regulate and control, and have a right to take over from the private sector when found necessary for the purposes of economic development, and (4) All industries not covered by the first three categories to be left open to private initiative.

Thus, the Resolution gave a dominant role to the government in the process of industrialization. This role was further intensified in the Second Five Year Plan. The development strategy in the Second Plan emphasized the establishment, growth and expansion of basic and heavy industries through the public sector. It was asserted in the plan that, the "public sector has to expand rapidly.

It not only has to initiate development which the private sector is either unwilling or unable to undertake, but it has also to play a dominant role in shaping the entire pattern of investments in the economy, whether it makes the investments directly or they are made by the private sector."[8] Similarly: "... in a growing economy which gets increasingly diversified, there is scope for both the private and public sectors to expand simultaneously, but it is inevitable if development is to proceed at the pace envisaged and contribute effectively to the attainment of larger social ends in view, that the public sector must grow not only absolutely, but also relatively to the private sector."[9] Further, "... Other industries which are essential and require investment on a scale which only the state in the present circumstances would be able to provide have also to be in the public sector."[10]

The Directive Principles of state policy enshrined in the Constitution (1950) and the acceptance of establishing a 'socialistic pattern of society' were also emphasized. Thus in the Second Plan it was stated: "... The adoption of a socialistic pattern of society as the national objective as well as a need for planned and rapid development require that all industries of basic and strategic importance or in the nature of public utility services, should be in the public sector."[11]

In 1956, the new industrial policy resolution provided

three schedules in the following order: (i) Schedule A - Those industries which are to be the exclusive responsibility of the state. (ii) Schedule B - Those industries which are to be progressively state-owned, in which generally new undertakings are to be established by state initiative, but wherein private industries are also allowed to supplement the effort. (iii) Schedule C - All remaining industries and their future development to be left to the initiative of the private sector.[12]

This categorization has remained the essentially general framework of industrial policy in later years, although the emphasis in terms of actual investment has varied.

The view that the public sector had to be developed because of the limited ability and unwillingness of the private sector to take up large investments due to low returns and long gestation periods, has been an essential argument for rationalization of the existence of the public sector and is a common theme among many economists, especially those with radical leanings. Some of them in fact argue that the promotion and development of such "state capitalism" was a historical requirement of the Indian bourgeoisie from which it has been reaping many benefits in the form of subsidized inputs and services.[13]

On the other hand, other economists support it as a viable and operationally feasible path of industrialization

within a democratic socialist framework. This school advocated the establishment and expansion of the public sector for various reasons. Some of these include: provision of social and merit goods, prevention of non-competitive behaviour and reduction of private economic concentration and monopoly, developing the infrastructure, heavy goods industries, and taking initiative in crucial areas where the private sector is either unable to and/or unwilling to act as a promotional agency. They envisaged the complementary co-existence of the public and private sector: "Without public sector there can be no private sector. In fact it is the former that enables the full growth of latter."[14] Moreover, "the public sector is expected to demonstrate the principle of efficiency, namely, maximization of output with minimized costs consistent with the quality of output."[15]

Such were the various interpretations of the role of the public sector. Any eventual judgement of the role of public sector will have to be made with these considerations as the main frame of reference.

[A detailed historical overview of the establishment and evolution of public enterprises is provided in the annexure appended to this chapter. See also Paranjape (1978).][16]

1.3 Organizational Forms and Systems of Control

Given this policy background, we now proceed to present

a brief summary of the various forms of organization as well as the legal, political, and administrative control systems operative within the public sector, which are essential to its understanding. Literature on these aspects is indeed vast. Most of the writings focus on the administrative and legal aspects of the public sector and often present the problem as one of organization and control. Several issues such as accountability versus autonomy for efficient functioning, possibility of 'efficiency and commercial audit' without stifling the initiative of top management, extent of interference and accountability, scrutiny and its admissible limits, or propriety of interference by any controlling organs or system, have been discussed repeatedly in considerable detail. We shall restrict ourselves to a brief review of certain relevant organizational features which have a direct bearing on performance and general environment of the public sector.

1.3.1 Forms of Organization

In India, public enterprises are established mainly under three forms: (1) Departmental enterprises, (2) Government companies registered as joint stock companies under the Company Act of 1956, and (3) Public or Statutory corporations.[17]

Departmental enterprises such as railways are those undertakings which are financed by annual appropriation from the treasury and all or most of their revenues are paid

back into the treasury. As an organ of government, it is subject to all regulations and procedures (e.g. budget, accounting principles, etc.) applicable to government and can be sued only by following the same procedure for filing a suit against the government. These do not normally hold or manage financial assets. Their staff consists of civil servants with similar procedures and conditions for recruitment applicable to other civil servants.[18]

Non-departmental enterprises have two different forms: Government Companies and Public Corporations. A Government Company is in most respects like any other private limited company, a body-corporate registered under the Company Act of 1956,(section 617) with either exclusive or at least 51 per cent of shareholdings by the government. It can sue or can be sued as any other company and acquire property in its name. It is, or can be, created by the government without specific or special approval by Parliament. Its Articles of Association, (though) conforming to the Company Act, are drawn up, devised and revised by the government. It is generally exempted from rules, regulations and procedures applicable to either the government itself or to departmental enterprises.[19]

The second type of non-departmental enterprise is the Public Corporation. This form implies state ownership created by a special Act of Parliament or Assembly, which would define objectives, powers, privileges, the form and

procedures of its management and its relationship with either government departments or ministries. It is a body-corporate, which can sue or can be sued, enter into contracts, and acquire property in its name. Its finances are generally derived through borrowings from government and sometimes from the public, as well as through its own resources. Many committees and experts have advocated and supported this form, but it is less adopted in practice in so far as production enterprises are concerned.[20] It is more frequently adopted for specific purpose(s) or service-generating, (Centre or State) government establishments.

1.3.2 Controlling Agencies

Due to peculiarities of ownership and the use of a public fund as a source of finance, some special procedures of control, management and regulation are necessary for public enterprises. Controls are required for the achievement of specific ends, ensure financial responsibility, regulation of undue power accruing to managements, ensuring maximum performance, and promotion of efficiency.[21]

All those controls meant for the protection of consumers, and those generally applicable to any industrial establishments, are equally applicable to public enterprises. Other controls are supposed "to create conditions for the realization of special ends expected of it".[22]

In the case of Central-Government-owned non-departmental enterprises, the Ministry of Finance is responsible for all

aspects of their management. It is monitored through a special body called the Bureau of Public Enterprise (BPE). The BPE was established for planning, consultation, information and providing a training system to Central Government non-departmental enterprises.

The principal agencies of control are: Government, Ministry, Parliament, and Audit.[23]

1) Government: Government exercises control over areas such as investment, borrowings, distribution of profits, approving additional capital expenditures above certain limits, the appointment of top managerial cadre, board of directors and auditors, and designing rules and conditions of service.

2) Ministry and Minister: The minister is politically responsible for the functioning of a public enterprise and formulates its current policy consistent with general public policy. The Ministry also works for the coordination between different enterprises under its control. It can exercise control over public enterprises in a variety of ways: issuing general and specific policy directives about various routine matters, participating in managerial affairs and decisions as a member of the governing board with veto power, appointment of the governing board and enterprises managers, and informal control (stemming from high positions in government as minister) and other influences of an informal nature.

3) Parliament: Control of parliament over public

enterprises differs from governmental control or ministerial control primarily because it is restricted to general overall policy and performance evaluation without any participatory or decision-making authority.

The major instrument and method of parliamentary control in India is the Committee of Parliament on Public Undertakings (COPU) constituted by each Parliament. It undertakes analysis of any current problem specific to public enterprises as a whole or may examine particular enterprises or groups of enterprises with specific problems or complaints. Its report contains recommendations for improvements and reforms, or criticism demanding further enquiry or explanation. It is obligatory for the government to convey its reply and reactions to these reports in the form of "Action-taken-reports".[24] Besides, there are usual parliamentary devices as parliamentary questions, call-to-attention motions, discussion on annual budgets of departments, annual reports of enterprises, etc.

4) Audit: Audit is a control system meant to evaluate the appropriateness of the accounting system and the propriety of expenditures and overall efficiency in use of funds under given commercial conditions. In the case of departmental undertakings, the Comptroller and Auditor-General of India (CAG) is the supreme constitutional audit authority. In the case of non-departmental undertakings, there are certain alternatives. In the case of public corporations, the CAG is

the supreme authority, but in some cases, audit is conducted by professional auditors, and approved and attested to by the CAG. In the case of government companies under section 619-A of the Companies Act of 1956, auditors are appointed on the advice of the CAG, who submit their reports to the CAG. The CAG in turn has a right to comment upon their reports and/or supplement them.[25]

These controlling agencies together decisively condition managerial and organizational behaviour of public enterprises. This must be taken into account while analysing the behaviour and performance of public enterprises. Each control-agency has a certain mode or technique by which it monitors and preserves accountability of public enterprises to society as a whole. But this system of accountability implies not only special procedures and institutional constraints under which it operates or functions, but it also involves potential interference - whether justified or not - which in the final analysis affects efficiency. This type of monitoring differs from the control exercised by the Board of Directors who watch and control their managing directors and other executive cadres in the private sector. The difference between private sector and public sector management lies here and not in the juridical or legal category of ownership as such. The change in ownership from 'private' to 'public' or 'state' ownership, does not necessarily do away with major institutional constraints which remain common to both.

Similarly, due to the pursuit of commercial objectives with certain non-commercial constraints and devices such as multiple audits, accountability and policy controls from government, it also differs from government administration. In the initial years of public enterprise management, the recruitment and appointment of higher managerial cadres were strongly influenced by government administrative practices. This resulted in staffing of posts with people from the administrative services. Later the inappropriateness of this was recognized and partially corrected. Nevertheless the influence of government administrative practices, together with variety of controls from outside, were responsible for the creation of the notion of a "procedure-oriented management", rather than a 'result-oriented' one.

Thus, while comparing public and private management or in understanding issues such as accountability and autonomy, these differences in environment should be borne in mind. The comparative position of the public enterprise managers and private business administrators can be summarized as follows:[26]

P.E. Administrator	Business Administrator
1) Fulfilment of "various goals" including profit maximization.	1) Profit and wealth maximization is the only goal.
2) Goals are set from outside and may not be always 'realistic'	2) Goals are set internally.
3) Techniques and means adopted should uphold and confirm the standard of being "highest custodians of public interest".	3) Means and techniques adopted do not have any content of "public interest and accountability" except few public regulations e.g. pollution.

P.E. Administrator	Business Administrator
4) Environmental constraints are various and accountability involves several supervisors.	4) Less environmental constraints; absence of external supervision and accountability.
5) Subject to Government (public) and commercial audit.	5) Subject to commercial audit only.
6) Rigidity of internal organization is more.	6) Easier to reorganize internal organization and delegation of powers.
7) Tenurial turnover is high and continuity is less.	7) Greater tenurial continuity.

Such are the essential features of the organizational framework under which all managerial decisions and actions take place. While assessing the performance and appraising what has been achieved or not achieved, this peculiar organizational framework and the limitations imposed by it should be taken into account. Before we proceed to the problems of measures (indicators) of performance or efficiency and its various aspects, we shall review the role and position attained by the public sector in the Indian economy over past two decades.

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ANNEXURE I

SOME MAJOR LANDMARKS IN THE GROWTH OF THE PUBLIC SECTOR : 1839-1976

1839 : The first Government experimental telegraph line was constructed in India.

1854 : The East India Company constituted the Postal Service under a Director General and issued a postage stamp on an all-India basis.

1922 : The (British) Government of India took over several British-owned railways. Indian Railways (along with numerous large and small railway workshops) thus became the third major public sector enterprise of the country after irrigation and post and telegraphs.

1924 : All India Radio went on air from Madras.

1943 : Fertilizers and Chemicals, Travancore, was incorporated. Starting ammonium-sulphate production in 1947, it was the pioneer in the large-scale manufacture of chemical fertilizers in the country.

1948 : Atomic Energy Commission was set up.

1949 : The Reserve Bank of India was nationalized (January).

1950 : Commencement of production at the Indian Telephone Industries Ltd., (Bangalore), one of the first manufacturing units under the public sector.

: Road Transport Act was passed by the Parliament to facilitate entry of public sector in road transport operations in an organized manner.

: Commencement of production at the Chittaranjan Locomotive Works, Burdwan district, West Bengal (January).

1949 : Inauguration of Aarey Milk Dairy in Bombay marked the entry of public sector into dairy industry on a large scale (March).

: Indian Rare Earths Ltd., was set up (August). The company helped to meet the rare earths requirements of the Atomic Energy Programme.

1951 : The Sindri fertilizer factory was commissioned at Sindri in Bihar. The decision for this was taken in 1943 following the recommendation of the Food-grains Policy Committee.

1952 : Work on Durgapur Barrage (Durgapur Railway Station in West Bengal across the Damodar river) commenced. It was completed in 1955 (Irrigation potential: 41.70 lakh hectares).

: Hindustan Shipyard Ltd. was registered (January) to take over the Visakhapatnam Shipyard from Scindia Steam. The shipyard was set up in 1941 under the stewardship of Walchand Hirachand.

: Hindustan Cables was incorporated at Rupnarainpur (West Bengal) for manufacture of telecommunication cables required mostly by the Post and Telegraph Department. The Rupnarainpur factory went into production in 1954.

1953 : Air-India International Ltd., a Tata company was nationalized (June). Air-India was established as a statutory corporation to take over its operations.

: Eight existing private undertakings operating scheduled air services in India were nationalized (June). Indian Airlines Corporation was established as a statutory corporation to take over their operations.

1954 : Hindustan Steel Ltd., was incorporated. It was the largest industrial unit of India till its undertaking

was merged with the Steel Authority of India Ltd., in 1978 (May).

1954 : Bharat Electronics Ltd. was set up (April). Over the years, it has emerged as a premier organization in the field of professional electronics, meeting a major part of defence requirements.

1955 : The Imperial Bank of India, the largest commercial bank in the country, was nationalized. State Bank of India was constituted to take over its operations. This marked the entry of the public sector into banking.

: Integral Coach Factory was inaugurated at Perambur Madras (October).

1956 : The first machine tool factory of HMT Ltd., at Bangalore was commissioned.

: State Trading Corporation of India was set up (May). This marked the entry of the public sector into foreign trade.

: Heavy Electricals (India) Ltd., was set up at Bhopal to undertake large-scale production of power plants and equipments (August). Later, in 1974, this enterprise was merged with BHEL.

: Oil and Natural Gas Commission (ONGC) was constituted as an autonomous organization to take over the functions of the Oil and Natural Gas Directorate, constituted earlier in October 1955 (August).

: 245 Life Insurance companies were nationalized and merged to form the Life Insurance Corporation of India (September). This was a major landmark in the policy of nationalizing existing "commanding heights" in the private sector.

: Neyveli Lignite Corporation Ltd., was set up (November).

1957 : Establishment of Bhabha Atomic Research Centre at Trombay, Bombay (January).

1958 : Government of India acquired majority shareholding in the National Newsprint and Paper Mills Ltd., a sick private sector company. It was then the only newsprint plant in the country.

: National Mineral Development Corporation Ltd., was set up (November).

1960 : Singareni Collieries (set up earlier in 1920) became a Government company.

: The Government of India took over the entire shareholding of Garden Reach Workshop Ltd., a running private sector company set up in 1884, engaged basically in ship repairs (April).

: Mazgaon Dock Ltd., over a century-old private unit was acquired by the Government of India, to cater to the needs of the Indian Navy (April).

: Hindustan Photo Films Manufacturing Co. Ltd., was set up at Ootacamund in Tamil Nadu (November).

: Hindustan Teleprinters Ltd., was set up at Madras (December).

: Hindustan Organic Chemicals Ltd. was set up (December) to manufacture basic organic chemicals and intermediates.

: The Fertilizer Corporation of India Ltd., New Delhi was set up with the amalgamation of Sindri Fertilizers and Chemicals Ltd. and Hindustan Chemicals and Fertilizers Ltd. (January).

: Indian Drugs & Pharmaceutical Ltd. was incorporated (January).

1960 : Visvesvaraya Iron and Steel Co. Ltd. was set up (June) to take over the "Mysore Distillation and Iron Works" set up in 1923.

: Diesel Locomotive Works, a departmental enterprise under the Railway Ministry, was set up at Varanasi in U.P. (August).

: The Shipping Corporation of India Ltd., came into being with the amalgamation of Eastern Shipping Corporation Ltd. and Western Shipping Corporation Ltd. (October). With about half of the country's gross registered tonnage in 1982, it is the largest shipping company in India.

1962 : Gauhati Oil Refinery, the first in public sector oil industry, of the Indian Refineries Ltd., commenced production (January).

: The first wrist watch factory of Hindustan Machine Tools Ltd., commenced production at Bangalore (October).

: The country's first heavy water plant was set up at Nangal (Punjab).

1963 : Cochin Refineries Ltd., was incorporated (September). Its refinery went on stream in September 1966.

: Minerals and Metals Trading Corporation Ltd. started functioning (October) to deal in import and export of minerals, ores and industrial raw materials.

1964 : Indian Oil Corporation Ltd., the largest industrial giant in the country in terms of sales, was incorporated by amalgamating Indian Refineries with Indian Oil Company.

: Hindustan Aeronautics — India's only aircraft manufacturing company also catering to the MIG and other

jet fighter requirements of the Indian Air Force — was incorporated by amalgamating Hindustan Aircraft and Aeronautics (India).

1964 : Bokaro Steel Ltd. was incorporated at Bokaro in Bihar (January). Its integrated Bokaro steel project went into production in 1973. The company's undertaking was merged with the Steel Authority of India Ltd., in 1978 (May).

: Bharat Earth Movers Ltd., Bangalore was incorporated for the manufacture of heavy earth-moving equipment and rail coaches (May).

: Hindustan Steelworks Construction Ltd. was set up for civil engineering and erection of steel structural works (June).

: Industrial Development Bank of India was set up as an apex financial institution (July).

1965 : Food Corporation of India was set up to handle the procurement and distribution of foodgrains in the country (January): earlier this was handled departmentally by the Central government. Currently, the corporation commands 17% share in the foodgrains market and is an important agency for buffer stock operations in foodgrains.

: Engineers India Ltd. was incorporated (March) as engineering consultants. In due course, it emerged as a giant high technology organization.

: Mining & Allied Machinery Corporation was established (April), to cater to the growing needs of mining industries.

: The high pressure boiler plant of Bharat Heavy Electricals Ltd. (BHEL) at Tiruchirapalli was commissioned (May).

1965 : Lubrizol India Ltd. was set up to manufacture chemical additives (July).

: Modern Bakeries (India) was incorporated (October).

: Bharat Aluminium Company Ltd., New Delhi was established (November). The company's Korba (M.P.) smelter was commissioned in 1975.

: Madras Refineries Ltd. was set up (December).

1966 : Madras Fertilizers Ltd. was incorporated (December).

1967 : Heavy electrical equipment of the BHEL at Hardwar was commissioned (January).

: Heavy machine tools plant of Heavy Engineering Corporation Ltd. at Ranchi was inaugurated (January).

1968 : The two plants of Instrumentation Ltd. at Kota in Rajasthan and Palghat in Kerala were commissioned.

: The National Textile Corporation Ltd. was set up to manage nationalized sick textile mills (April). As a holding company for 9 regional NTCs, it is currently in charge of all the 112 textile mills. The company accounts for 18% of spindles and 28% of total looms installed in the country.

1969 : India's first nuclear power station with two units of 200 mw each at Tarapur in Maharashtra went into commercial operation.

: In an unprecedented move, the Prime Minister, Mrs. Indira Gandhi nationalized 14 major Indian banks with deposits exceeding Rs. 50 crores each (July), signifying the capture of the highest of commanding heights of the Indian economy.

: Rural Electrification Corporation Ltd. was set up (July) to finance rural electrification schemes.

1970 : The first cement plant of the Cement Corporation of India was commissioned at Mandhar in M.P. (July). The company was incorporated in 1965 (May).

: Cotton Corporation of India was set up (July).

1971 : The management of all Indian and foreign-owned general insurance companies in the country was taken over by the Government of India through an Ordinance (May). General Insurance Corporation of India was set up in November 1972 to take over, along with its subsidiaries, general insurance business.

: A preliminary feasibility report was submitted to the Railway Board for a wheel and axle plant at Yelahanka (Bangalore, Karnataka) as Hindustan Steel and TISCO works were unable to meet the full demands of the Railways in this respect.

1972 : Bharat Gold Mines Ltd. was set up (April) to take over the 92-year old Kolar Gold Mines from the Mysore State Government.

: India's first letter-press printing machine was manufactured by the Kalamassery unit of HMT Ltd. (July).

: The Lok Sabha passed the Indian Iron and Steel Company (taking over of management) Bill replacing the ordinance by which the management of the Company was taken over by the Government of India on July 15, 1972 (August). The Company was finally nationalized in 1976.

: Hindustan Aeronautics Ltd., manufactured the first light-weight multi-role helicopter in its factory at Bangalore (October).

1973 : Steel Authority of India Ltd. (SAIL) was registered on January 24, 1973 as a public sector undertaking

at Delhi to act as an apex body for public sector companies engaged in production of steel and related inputs (January).

1973 : The Union Government took over the management of all the 464 private non-coking coal mines in the country, pending ultimate nationalization (January). This was a major landmark in the policy of nationalizing the commanding heights of the economy.

: Jessop and Company (originally established in the private sector in 1788) became a public sector company (April).

: The Oil and Natural Gas Commission (ONGC) started large scale off-shore drilling in the Bombay High oil-field in the Arabian Sea, 120 kms. north-west of Bombay (October).

1974 : The bill seeking to take over 74% of the equity capital of the Esso Standard Refining Company of India, was passed by parliament (March). The remaining 26% equity capital was acquired by the government in 1976.

1975 : Coal India Ltd. was incorporated as a holding company for Central government-owned coal companies.

: The first lot of scooters rolled out from the Lucknow plant of Scooters India Ltd. (February).

: Metallurgical and Engineering Consultants (India) — earlier a division of Hindustan Steel — was set up (March), as a separate public sector company. In due course it emerged as a giant high technology consultancy organization.

: National Thermal Power Corporation Ltd. and National Hydro-electric Power Corporation Ltd. were

incorporated (November). These are the country's apex agencies in thermal and hydro-electric power.

1976 : The Burmah Shell (Acquisition of Undertakings in India) Bill was passed by parliament (January).

Source : Adapted from the Commerce Yearbook on Public Sector, and Centre for Monitoring Indian Economy publications on the public sector.

CHAPTER II

SIZE AND ROLE OF PUBLIC SECTOR IN INDIAN ECONOMY (1960-80) : A MACRO VIEW

In this chapter, we shall review the size and role of the public sector in the economy over the years 1960-1980. As pointed out earlier, from the Second Five Year Plan (1956) onwards, significant importance was accorded to the public sector. As a result the contribution of the public sector to the national product has steadily increased. For our purposes, we have divided the period 1960-1980 into four quinquennial periods. For each of these quinquennials, we present the share of public sector in gross domestic product (GDP) and in gross domestic capital formation (GDCF). Both the GDP and GDCF series have been in 1970-71 prices. The shares are computed at the sectoral level as well as at the economy level; and represent quinquennial average shares. We also present the sectoral composition of GDP and GDCF in the public sector, based on the same data. While discussing public sector GDCF, we also examine the savings made by the public sector. Data used for this purpose have been taken from the National Accounts Statistics (NAS) series published by the Central Statistical Organisation (CSO), and the CSO's special publication Transactions of Public Sector, 1983 (TPS 1983).

It will be useful to understand the role and size of the public sector in the development of modern organized activities in various sectors. We have quoted the share of the public sector in organized activity from V.K.R.V. Rao (1984).[1] We have also presented shares of different forms of organization in the output of the public sector i.e. departmental, non-departmental and administrative activity. These are quinquennial average shares for 1960-1980, based on Net Domestic Product (NDP) of the public sector at current prices. We have also computed the rates of growth of public sector GDP. These are computed separately for the two decennial periods of 1960-70 and 1970-80. The growth rates are estimated by fitting semi-log function, $\ln Y = a + bt$, where Y = output and t = time.

In the analysis of the role played by the public sector, we have chosen to focus more on manufacturing, particularly those industry groups of enterprises coming under the management of the BPE, electricity, and railways, because these are crucial or core sectors. We review and analyse the data of these sectors, in greater detail in sections 2.2.1, 2.2.2 and 2.2.3.

2.1.1 Share and Composition of Public Sector Output

As pointed out earlier, in certain sectors, the Central (or state) government enjoys a complete monopoly. These sectors (as per NAS classifications) are: railways, communication and public administration. There are also

certain monopolies, generally established by a special Act of either the Central or State government. The most important among them are electricity (generation and distribution) boards,(and in States such as Maharashtra, passenger road transport). In the case of electricity generation and distribution there exists some private sector activity. But over the period, the share of the public sector has grown by virtue of its monopoly position in new investments and expansion. The share of the public sector in Electricity, Gas and Water Supply was 78.95 per cent in the first quinquennium (1960-65) and it increased to 85.36 per cent in the second quinquennium (1966-70) and thereafter has remained stable at 86 per cent.

The share of the public sector in the economy as a whole, was 10.72 per cent in the first period (Table 2.1). It increased by about 3 percentage points in each quinquennium and reached 19.81 or almost 20 per cent of the GDP in 1980. For 1982-83, it was estimated to be 23 per cent of the GDP. Thus, from the first quinquennium to the fourth quinquennium its share in the total GDP has nearly doubled, generating more than one-fifth (now nearly one-fourth) of the gross domestic product.

The progress has not been even in all sectors. In some sectors, there are sudden shifts particularly during 1965-1970 and 1970-1975. The years, 1966-1969, were years when the plan took a holiday. In 1969, planning was resumed.

Table 2.1 : Share of Public Sector in Gross Product [with GDP at 1970-71 Prices]

(in Percentages)

Particulars	1960-61 to 1964-65	1965-66 to 1969-70	1970-71 to 1974-75	1975-76 to 1979-80
1. Agriculture	0.38	0.74	1.35	1.98
2. Forestry	26.03	25.85	30.04	37.60
3. Mining and Quarrying	23.90	29.69	45.00	69.90
4. Manufacturing	10.47	13.11	13.40	14.07
5. Construction	5.71	6.14	9.09	13.81
6. Electricity, Gas & Water Supply	78.95	85.36	86.08	85.96
7. Transport by other means and storage	21.05	23.76	25.30	27.20
8. Trade, Hotels and Restaurants	0.83	1.83	2.98	3.24
9. Banking and Insurance	35.00	49.40	69.05	69.80
10. Other Services	20.64	30.86	44.13	59.32
Total	10.72	13.98	16.66	19.81

Source : TPS, CSO.

This was followed by the nationalization of fourteen major banks. Similarly, between 1972-75, coal-mines were nationalized and many sick textile units were taken over by the government (see the Annexure I, Chapter I, for a summary overview of these developments). These are reflected in the

share of the public sector in output (and investment) in particular sectors.

In mining and quarrying, the public sector accounts for 23.9 per cent of the output in the first period. This increased by 5 percentage points in the second period (1965-1970). But in the third period, (1970-1975) because of nationalization of coal mines it increased by 15.31 percentage points. The process continued so that in the fourth quinquennium the public sector accounted for the 69.90 per cent of the mining sector's GDP. In organized mining 83.97 per cent of the NDP comes from the public sector.

In banking and insurance, the public sector initially accounted for 35 per cent of the sector's GDP. It increased by 14.4 and 20 percentage points in the second and third periods respectively and thereafter stablized at 69 per cent. Similarly because of the expansion of social services such as education and health, the share of public sector, in the sector called 'Other Services' has greatly increased. The public sector contributed 20.64 per cent of the output of the 'Other Services' in the first period. It increased by 10.22 percentage points in the second period and by 14 and 15 percentage points in the third and fourth periods respectively. Thus, at the end of the fourth period, it contributed two-thirds of the output in this sector.

The share of the public sector in 'transport other than railways' has been increasing by roughly two percentage

points in every quinquennium. In the first period, its share stood at 21.05, and gradually moved to 23.76, 25.3 and 27.2 in the second, third and fourth quinquennium respectively. The share of the public sector in the organized sphere of this sector has increased more rapidly. In the first period it was 36.44 per cent. It improved marginally to 37.33 per cent in the second period. But in the third period, because of taking over of road-transport by State governments undertakings and the expansion of air-transport, share of public sector in organized activity increased to 67.22 per cent.

In the manufacturing sector, the share of the public sector was 10.47 per cent in the first period. It improved to 13.105 in the second period. In the third period, it remained virtually stagnant at the same level (13.40 per cent) and improved marginally in the fourth period (14.07 per cent). The same is true of its share in organized manufacturing output. It constituted 17.01 per cent of organized GDP (not NDP of Table 2.2) in manufacturing. It remained stagnant at 20.61 and 20.73 per cent respectively, and improved slightly to 21.72 per cent in the fourth period. We shall return to the subject later.

Thus, public sector activity in various sectors has increased, though the extent of its expansion differs between sectors, and within sectors, it differs between periods. In some cases it has been traditionally a pure or

Table 2.2 : Percentage Share of Public Sector (by Sectors of Industrial Origin) in the Income from Organized Economic Activity

Sector (or Industrial origin)	1960-61 to 1964-65	1965-66 to 1969-70	1970-71 to 1974-75	1975-76 to 1979-80
Agriculture	47.51	59.19	64.10	65.24
Forestry	26.26	26.12	31.12	35.87
Mining and Quarrying	13.65	23.96	45.14	83.97
Manufacturing	10.16	14.50	19.55	24.28
Construction	12.98	15.82	18.98	24.24
Electricity, Gas and Water Supply	69.35	75.00	84.00	88.40
Railways	100.00	100.00	100.00	100.00
Communication	100.00	100.00	100.00	100.00
Other Transport and Storage	36.44	37.13	67.72	80.62
Trade and Hotels	4.93	16.85	34.37	57.19
Banking and Insurance	41.53	46.24	70.51	80.62
Public Administration	100.00	100.00	100.00	100.00
Other Services	67.98	79.31	68.28	65.24
Total	42.99	48.98	56.22	62.06

Source : V.K.R.V. Rao. India's National Income: 1950-1980, p. 64.

almost complete monopoly, i.e. railways, electricity, while in others, it has gained a similar position only recently e.g. mining and quarrying, banking and insurance, while in

yet others, the share of public sector has been steadily increasing. The same is true of its share in organized activity. In 1975-80, the public sector accounted for 62.06 per cent of the total organized NDP, but the pace of its expansion differs between sectors, and within a sector, between periods (see Table 2.2).

2.1.2 Sectoral Composition of Output

We may now examine sectoral composition of the public sector output. Table 2.3 provides the relevant data. The shares are quinquennial average shares.

In the early years i.e. in the first period between 1960-1965, the dominant sectors were public administration (31.645), railways (15.24), manufacturing (13.33), and other services (10.57). As the government's participation in various activities expanded unevenly, the shares of some of these dominant sectors declined over the years. For example the share of 'public administration' in public sector output declined from 31.64 per cent in the first period, to 28.83 per cent in the fourth period. The share of railways declined even faster, i.e. from 15.24 per cent in the first period to 8.58 per cent in the fourth period. Manufacturing as proportion of public sector activity has been stagnant at 13.32 and 13.76 per cent in the first two periods. But it declined to 11.95 and 10.97 per cent in the third period and fourth period respectively.

Table 2.3 : Structure of Public Sector Gross Domestic Product with GDP at 1970-71 Prices

Particulars	1960-65	1965-70	1970-75	1975-80
1. Agriculture	1.764	2.3671	2.83	3.55
2. Forestry	2.581	2.217	2.01	1.69
3. Mining and Quarrying	2.220	2.389	2.89	3.87
4. Construction	2.467	2.499	2.77	3.54
5. Manufacturing	13.328	13.763	11.95	10.97
6. Electricity, Gas and Water Supply	4.995	6.244	6.40	6.36
7. Transport and Communication	24.961	21.961	18.83	17.66
i) Rail	15.241	12.58	9.9	8.58
ii) Communication	4.967	4.661	4.26	4.06
iii) Other Transport	4.751	4.771	4.67	5.02
8. Trade and Hotel	0.007	1.460	2.00	1.94
9. Banking and Insurance	4.731	5.677	7.99	8.50
10. Public Administration/Defence	31.645	30.001	29.76	28.83
11. Other Services	10.773	11.414	12.56	13.10
Total	100.00	100.00	100.00	100.00

Source : Computed from data on GDP in Public Sector as given in TPS, CSO, 1983.

On the other hand, banking and insurance have improved their shares in the composition of public sector output from 4.73 per cent in the first period to 8.5 per cent in the fourth period. Similarly, the share of 'other

services' increased from 10.57 per cent in the first period to 13.10 per cent in the fourth period. Other sectors which did improve though marginally, are mining and quarrying, agriculture, electricity, gas and water supply, and trade and hotels. Most of them have improved between 1 and 1.7 percentage points over these periods.

Nevertheless, 'public administration' (28.34 per cent) still remains the largest component of public sector activity in the fourth period. It is followed by other services (13.10), manufacturing (10.97), railways (8.58), banking and insurance (8.5).

2.1.3 Public Sector Output by Types of Organization

In the first chapter we have already noted that public sector enterprises are established either as administrative and departmental enterprises or as non-departmental enterprises. Issues such as accountability versus autonomy, the company form versus the corporation form and the need for different types of organization specific to their activities on commercial lines have often been discussed. From Table 2.4 it will be clearly seen that the government's general choice has been in favour of expanding non-departmental forms. However, in railways, communication, forestry, public administration, trade and hotels, the activities (upto 1970) have been conventionally organized and operated as departmental enterprises.

In manufacturing, non-departmental forms are preferred.

Table 2.4 : Composition of Public Output by Forms of Organization at Current Prices (NDP)

	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69	1969-70	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
Agriculture																				
D	100	100	100	98.14	98.38	97.05	95.60	93.93	94.78	95.51	96.42	96.91	96.41	95.63	94.40	93.90	92.65	93.53	90.86	90.66
ND				1.86	1.62	2.50	4.40	6.07	5.22	4.43	3.58	3.09	3.59	4.37	5.60	6.10	7.35	6.47	9.14	9.34
Manufacturing																				
D	70.73	65.98	53.60	45.98	50.00	48.30	45.49	40.68	38.44	32.49	30.04	30.18	30.61	24.85	19.89	23.81	18.31	19.68	15.88	15.64
ND	29.27	34.02	46.40	54.02	50.00	51.70	54.51	59.32	61.56	67.51	69.96	69.82	69.39	15.15	80.11	76.19	81.69	80.32	84.12	84.36
Construction																				
AD	41.86	42.55	42.59	36.51	38.71	32.50	37.65	34.61	40.98	39.68	39.10	39.24	37.57	26.67	37.04	36.60	33.42	31.08	29.96	31.60
D	55.81	53.19	51.85	55.55	53.22	61.25	56.97	61.54	56.56	57.14	56.39	53.78	53.18	59.49	47.14	53.27	53.48	54.28	52.14	54.72
ND	2.33	4.26	5.56	7.94	8.07	6.25	5.88	3.85	2.46	8.18	4.51	6.98	9.25	13.84	15.82	10.13	13.10	14.64	17.90	13.68
Electricity, Gas, Water																				
AD											8.30	9.03	9.55	10.77	9.23	7.98	6.99	7.44	7.43	6.82
D	22.22	20.75	17.74	21.05	13.48	12.50	16.13	14.86	9.34	15.25	13.58	7.64	5.73	5.85	9.01	5.85	9.29	8.11	7.16	5.74
ND	77.18	79.25	82.26	78.95	86.52	87.50	83.81	85.14	30.66	84.75	78.12	83.33	84.72	83.38	81.76	86.17	83.72	84.45	85.41	81.44
Transport by Other Means																				
AD	3.33	3.03	2.67	3.66	3.23	3.85	3.33	3.45	2.87	3.17	2.87	2.71	2.34	2.22						
D	60.00	51.51	48.00	46.34	43.01	40.38	37.50	34.48	37.36	36.51	36.36	34.84	26.17	24.68	25.01	30.04	25.68	26.05	26.76	33.42
ND	36.67	45.46	49.33	50.00	53.76	55.77	59.17	62.07	59.77	60.32	60.77	62.45	71.49	13.10	74.39	69.96	74.32	73.95	73.24	66.58
Trade and Hotel																				
D	100	100	100	100	100	100	100	100	100	100								[illegible]	[illegible]	[illegible]
ND											100	100	100	100	100	100	100	98.84	99.[illegible]	[illegible]

Source : TPS, [illegible], 1983.

D = Departmental
ND = Non-Departmental
AD = Administrative Departments

If we consider the share of non-departmental output in total public sector manufacturing output over the period 1960-1980, the preference for non-departmental forms is clearly evident. In 1960-61, the share of non-departmental activity was 29.27 per cent; and in 1980 it was 85 per cent. A similar preference for non-departmental forms is evident in electricity, gas and water supply, and transport by other means, i.e. other than railways. But in 'transport by other means', the departmental share has remained at 30 to 33 per cent in 1975-1980 which is certainly substantial.

In the case of trade and hotels, there appears to have been a sudden and very drastic shift. Upto 1969-70, all of the product originating in the public segment of this sector is shown as 'departmental'. However, from 1970-71 to 1976-77, all of it has been shown as non-departmental. From 1977-78 onwards, some output (though very small), has once again been shown as departmental. If we go by the notes and explanations provided in the Transactions of Public Sector by the CSO, the reasons are not clear. Further, within non-departmental enterprises there are two forms: the company form and the corporation form. There is no way of assessing the proportion of these two types from the CSO data. But from BPE reports and various other reports it appears that generally in production, particularly manufacturing production enterprises, the company form has been dominant, and in public utilities and services like road transport, trade, warehousing, the corporation form has been dominant.

2.1.4 Employment in Public Sector

We may also assess the size of the public sector by the employment it provides. In Table 2.5, we give data on employment in the public and private organized sector by broad NAS sectors for the selected years (i.e. 1961, 1975, 1982). A further disaggregated picture on employment distinguishing public from private sectors is of course possible, but this is a very complex task. Mridula Eapen has attempted to construct a more disaggregated-level time-series data on public sector and private sector employment.[2] But the changes in industry classification in 1970, changing coverage and the varying responses in the DGET data cannot be satisfactorily tackled. Consequently, estimates of the rates of growth on this basis are therefore seriously affected. While the data base has improved since the 1970s, we should however be aware that the definition of 'organized' differs between the DGET and the ASI and pooling of these two sources is difficult. In this connection we feel that at least for some years, the ASI should distinguish units in its survey by ownership at some disaggregated level which would be useful for analysing public sector transactions at a greater detail. [We shall have occasion to return to this subject once again in our discussion of the data base of public manufacturing enterprises.]

The data on public sector and organized private sector employment that we have presented in Table 2.5 is

Table 2.5 : Industrywise Employment in Organized Sector

(in '000)

Sector	1961			1975			1982		
	Public	Private	Total	Public	Private	Total	Public	Private	Total
Agriculture and Forestry, Fishing, etc.	180 (21)	670 (79)	850 (100)	334 (29)	818 (71)	1152 (100)	456 (35)	850 (65)	1306 (100)
Mining and Quarrying	129 (19)	550 (81)	679 (100)	694 (75)	123 (15)	817 (100)	832 (87)	129 (13)	961 (100)
Manufacturing	369 (11)	2020 (89)	3389 (100)	1019 (20)	4111 (80)	5130 (100)	1592 (25)	4725 (75)	6318 (100)
Construction	603 (72)	240 (28)	843 (100)	956 (88)	127 (12)	1083 (100)	1112 (94)	70 (6)	1182 (100)
Electricity, Gas, Water Supply	224 (85)	40 (15)	264 (100)	508 (93)	39 (7)	547 (100)	699 (95)	36 (5)	735 (100)
Trade and Commerce	94 (37)	160 (63)	254 (100)	53 (15)	309 (85)	362 (100)	113 (29)	278 (71)	391 (100)
Transport, Storage Communication	1724 (96)	80 (4)	1804 (100)	2364 (97)	79 (3)	2443 (100)	2781 (98)	60 (2)	2842 (100)
Finance, Insurance, Rent Estate, etc.	N.A.	N.A.	N.A.	511 (75)	169 (25)	680 (100)	815 (80)	204 (20)	1019 (100)
Services (including Govt. Administration)	3727 (93)	280 (7)	4007 (100)	6444 (86)	1032 (14)	7476 (100)	7547 (86)	1258 (14)	8806 (100)
Total	7050 (58)	5040 (42)	12090 (100)	12883 (65)	6808 (35)	19691 (100)	15948 (68)	7611 (32)	23558 (100)

Note : Figures in the brackets are percentages.

Source : Monthly Statistical Abstract. CSO.

taken from the Monthly Statistical Abstracts of the CSO. It can be seen from Table 2.5, that the public sector accounted for 58 per cent of total organized employment in 1961. In 1982, it accounted for 68 per cent of total organized employment. In the manufacturing sector, its share has improved from 11 per cent in 1961, to 25 per cent in 1982. In transport, storage and communications, it is as high as 98 per cent in 1982. This is obviously because railways and communications (which are its major components) are exclusive monopolies of the government. But in the service sector, including public administration, the share of public sector has declined. (It may be recalled that share in output has increased.) In electricity, gas and water supply, it accounts for 95 per cent of the sector's employment. This sector has hardly any unorganized activity and there exists a near-monopoly of the government. It may be noted that in electricity, construction, as also in mining for some time, private organized employment has been falling even in absolute terms.

The role of public sector in generating employment in the modernized sphere is thus significant and predominant. However, whether its labour force is being productively and economically utilized, is another issue which requires a separate, and preferably more disaggregated examination. A simple measure for this is perhaps the NDP or the GDP per worker. We have presented data on this aspect for some

Table 2.6 : Per Worker NDP (Current Prices)

	1961			1975			1982		
	NDP (Crores)	Employ-ment (000)	Per worker	NDP (crores)	Employ-ment (000)	Per worker	NDP (Crores)	Employ-ment (000)	Per worker
Public Sector									
Manufacturing	97	369	2628	1415	1019	13886	3044	1592	19121
Electricity	53	225	2356	564	508	11102	1663	699	23791
Construction	47	603	7794	306	956	32008	959	1112	8624
Private Sector									
Manufacturing organized	1068	3020	3536	4415	4111	10739	9531	4725	20171
Electricity organized	24	40	6000	86	39	22051	171	36	47500
Construction organized	283	240	11792	938	127	73858	2249	70	321285

selected years and sectors in comparison with the private sector [see Table 2.6]. In the manufacturing sector, which is our main concern in this study, the NDP in current prices per worker is slightly higher in the organized private sector than in the public sector in the years 1961 and 1982. But in 1975, the public sector had a higher NDP per worker. In electricity, gas and water supply, the private organized sector has a higher NDP per worker than the public sector for 1961 and 1975. This is also true for construction. Hence it seems that the productivity of employed workers is less in the public sector than in the private sector. There may be several reasons such as over-staffing or sticky administered prices in the public sector. In any event a more disaggregated analysis is necessary before we come to any firm conclusion.

2.1.5 Share of Public Sector in Investment and Savings

We may also assess the expansion and performance of the public sector by its share in Gross Domestic Capital Formation. This is given in Table 2.7. These shares are computed as quinquennial average shares from time series data on gross domestic capital formation by use at 1970-71 prices for the period of 1960-1980.

At the aggregate or total economy level, the share of public investment was 45.63 per cent in the first period. In the second period, it decreased by 4.82 percentage points and remained almost stagnant at the same level in the third

Table 2.7 : Share of Public Sector GDCF in Total GDCF

Particulars	1960-65	1965-70	1970-75	1975-80	1980-83
1. Agriculture	30.54	27.91	27.38	31.82	31.50
2. Forestry	90.41	91.75	76.10	81.93	92.45
3. Mining and Quarrying	75.15	82.80	84.57	81.11	100.00
4. Manufacturing	32.794	34.19	29.02	36.07	41.74
5. Construction	9.86	16.68	20.06	22.52	34.66
6. Electricity, Gas and Water Supply	91.71	96.74	99.42	96.76	100.00
7. Transport by Other Means	28.82	34.97	41.77	44.64	34.09
8. Trade and Hotel	6.367	49.54	16.90	36.44	7.97
9. Banking and Insurance	42.35	46.32	64.11	60.61	69.09
10. Other Services	19.01	29.01	72.40	84.60	87.21
Total GDCF	45.63	40.82	40.89	46.47	49.90

period i.e. 40.89.[3] But it improved by 5.58 percentage points in the fourth period (1975-80). During the period of 1970-75 the share of public sector in gross domestic capital formation of manufacturing sector has declined to 29.02 per cent. Similarly in the period of 1965-70, the capital formation (in 1970-71 prices) in Railways has declined continuously even in absolute terms.[4] Due to deceleration in these two sectors the share of public sector in total

GDCF remains stagnant and low. It has been suggested that slowing down of capital formation in these two sectors was an important factor in the alleged industrial stagnation since mid-sixties.[5]

In other services, construction, banking and insurance, transport other than railway, electricity, gas and water supply, public investment has been continuously growing. In certain sectors such as trade and hotels and forestry, investment has fluctuated widely. The most impressive rise is in the case of other services, where the share of public sector has increased from 29.01 per cent in the second period to 72.40 per cent in the third period. As mentioned earlier, the share of public output in this sector improved greatly in this period.

Another aspect of public sector investment is the method of its financing. The Second Five Year Plan strategy had envisaged that the public sector would generate sufficient surpluses and grow largely on internal resources. Table 2.8 provides some relevant data on this aspect. It shows public sector savings (1) as a percentage of total GDP, (2) as a percentage of public sector GDP, (3) as a percentage of total savings, and (4) as a percentage of public investment. All of these percentages refer to quinquennial periods of 1960-65, 1966-70, 1971-75 and 1976-80.

It will be noted that there was a decline in all these ratios during 1966-70, followed by a slight improvement

Table 2.8 : Ratios of Public Sector Savings to Total GDP, Public Sector GDP, Total Savings and Public Sector GDCF

Period	Public Sector Saving/ Total GDP	Public Sector Saving/ Public Sector GDP	Public Sector Saving/ Total Saving	Public Sector Saving/ Public Sector GDCF
1960-65	3.57	29.65	23.19	40.90
1966-70	2.86	21.11	17.14	36.90
1971-75	3.53	22.79	18.10	41.68
1976-80	5.21	26.19	20.90	46.37

Source : TPS (1983), CSO.

or recovery in the third quinquennial and significant improvement in the fourth period. However, the ratio of public sector saving to public sector GDP and the ratio of public sector savings to total savings even in the fourth period do not attain the levels in first period (1960-65). However, the ratio of public sector savings to public sector investment in the fourth period (after a setback in the second period), exceed that in the first period. This is also true of the ratio of public sector savings to total GDP.

The position is of course different in different sectors. For instance in the case of non-departmental manufacturing, except in 1973-74, 1974-75 and 1976-77,

there have been negative savings or dissavings for the entire period of 1960-80 (see Table 2.9). In electricity, gas and water supply, the savings were negative during 1965-1974. From 1974-75 onwards, savings are positive but not adequate. The same is true of departmental road transport.

Thus in certain major fields the public sector has not been able to generate adequate surpluses as was originally envisaged. Consequently the investment in the public sector has continued to depend on the savings and surpluses of the private sector. This is the so-called 'crowding out' of private investment due to increased investment (in production activity) in the public sector. Some authors have claimed that such 'crowding out' has in fact already taken place in the Indian economy.[6] For instance, K. Krishnamurthy arrives at this conclusion for industry and the tertiary sector from a simulation exercise with a macro-econometric model developed by him.[6] We should note however that the results differ by level of aggregation or by sectors and by periods. Accordingly, "though public investment 'crowds out' private investment in some sectors and for some years, aggregate GDP does not suffer losses. Public sector supplants private output." Moreover: "... dominance of crowding out effect could be a post-1965 phenomenon as foreign aid slowed down".[7] In the first one and a half decades (1950-65), he suggests that complimentarity may have prevailed, because resource constraints were less severe as foreign aid was available.

Table 2.9 : Savings and Finance for Accumulation in Public Sector Manufacturing and Electricity Undertakings

(Rs.Lakhs; Current Prices)

Year	Manufacturing		Electricity	
	Savings	Finance for Accumulation	Savings	Finance for Accumulation
1960-61	-1415	25738	N.A.	N.A.
1961-62	-2050	19514	N.A.	N.A.
1962-63	-2603	23199	N.A.	N.A.
1963-64	-703	25321	N.A.	N.A.
1964-65	-1493	31632	N.A.	N.A.
1965-66	-1895	41300	-690	52349
1966-67	-4316	46391	-1616	33436
1967-68	-6594	46570	-1467	33828
1968-69	-6053	39284	-1474	36738
1969-70	-3994	39873	-1814	41653
1970-71	-1781	39726	537	52070
1971-72	-3090	50965	-974	51553
1972-73	-2200	63437	244	57585
1973-74	+602	94145	-3709	55096
1974-75	-9963	140816	517	69488
1975-76	-5091	134879	2185	117110
1976-77	+2127	164441	7909	126789
1977-78	-11339	149719	4463	157029
1978-79	-270	175220	3204	170036
1979-80	-15023	254403	375	202029

Source : TPS, CSO, 1983, pp. 62-63 and 70-71.

It seems to us that to establish any crowding out of private sector requires another type of information, namely, private investment which would have come up had there been no expansion of public sector investment. As it happens, no estimates of production linkages between the two sectors available. Additionally, given the industrial policy of regulation and controls, it is very difficult to simulate and model private investment behaviour under conditions of no public sector investment. There is little doubt, however, that it will be necessary to improve financial and production management in some crucial public sectors, if they are to finance their expansion from internal resources as they must.

2.2.1 Public Sector in Manufacturing Activity

As pointed out earlier, the Second Five Year Plan had emphasized the role of the public sector in key industries. Apart from providing physical infrastructure and social services such as transport, communications, banking, health, education, electricity,gas, etc., an important part of the strategy was to develop basic capital goods industries in the public sector. In the following we provide a broad overview of the public sector's role in manufacturing as a whole, and in a few selected key industry groups.

The data available for this purpose is limited. Hence to determine the share of the public sector at a somewhat more disaggregate level (e.g. 16 manufacturing industries

used in NAS registered sector data), requires a great deal of pooling of different sources with different classification of industries. The principal source of data for public enterprises is the Bureau of Public Enterprises (BPE). The growth of central government non-departmental enterprises (which are now under the management of the BPE) has been phenomenal. On 1st April 1951, there were only five enterprises with an investment of Rs.29 crores. On 1st April 1982, there were 201 enterprises with an investment of Rs. 24,761 crores.

The BPE distinguishes enterprises under its management under two major categories: (i) Production enterprises, (ii) Service and Trading enterprises. In the first category, there are twelve industry groups namely, steel; minerals and metals; coal; power; petroleum; chemicals, fertilizers and pharmaceuticals; heavy engineering; medium and light engineering; transport equipment; consumer goods; agro-based products; and textiles. In 1981-82, there were 135 enterprises in this category with Rs. 14,720 crores of capital invested. The second category includes trading and marketing, transportation services, contracts and construction. In 1981-82, there were 52 enterprises in this category with Rs. 7,145 crores of capital employed.

Data on these industry groups as published by the BPE cannot be easily combined with data from the ASI because of different classification, and the latter does not

distinguish enterprises by ownership as public, private, or joint. The BPE itself sometimes publishes shares of public enterprises under various 'commodity-groups'. On the other hand, some non-government agencies such as the Commerce Bureau and the Centre for Monitoring Indian Economy have estimated the public sector's share for certain commodities by deriving and pooling the information from the BPE, Ministry of Industry reports, Parliament reports, COPU reports, etc. One such set of estimates is presented in Table 2.10. It gives all those industries where the public sector has a complete monopoly i.e. 100 per cent share in production. It also gives the industries in which it has a dominant position i.e. between 50 and 75 per cent, but co-exists if not necessarily competes with the private sector. Hence it would be possible to compare its operational efficiency with efficiency in the private sector assuming similar risks. In Table 2.11, we have presented for a number of enterprises, capital employed, and rates of gross profit to capital employed, for the years 1975-76 to 1983-84. Table 2.12 provides similar data by major industry groups.

We have already mentioned the public sector's share in manufacturing output and investment. In 1975-80, it accounted for 21.72 per cent of GDP of organized GDP in manufacturing and 47.15 per cent of its investment. If we compare the growth rates of output in public and private organized manufacturing, the picture is as follows (see

Table 2.10: Share of Public Sector in Selected Important Manufacturing Products

Item/Indicator		Unit	Period	Public sector	Entire economy	Public sector as % of entire economy
Newsprint	Capacity	'000 tonnes	1981-82	230	230	100
	Production	'000 tonnes	1981-82	79	79	100
Dimethyl terephthalate (DMT)	Capacity	'000 tonnes	1981-82	30.0	30.0	100
	Production	'000 tonnes	1981-82	27.3	27.3	100
DDT (Technical)	Capacity	'000 tonnes	1981-82	4.1	4.1	100
	Production	'000 tonnes	1981-82	3.3	3.3	100
Refinery throughput	Capacity	Mln. tonnes	1982-83	37.8	37.8	100
	Crude run	Mln. tonnes	1982-83	33.16	33.16	100
	Production	Mln. tonnes	1982-83	31.07	31.07	100
Copper (cathodes)	Production	'000 tonnes	1981-82	27.4	27.4	100
Lead	Production	'000 tonnes	1981-82	14.5	14.5	100
Coaxial cables	Production	'000 tkm	1981-82	2.6	2.6	100
Telephone cables	Production	Lakh ckm	1981-82	24.6	24.6	100
Telephones	Production	'000 number	1982-83	725	725	100
Teleprinters	Production	'000 number	1982-83	10,000	10,000	100
Air-craft	Value of output	Rs. crores	1981-82	275	275	100
Shipbuilding	Production	Rs. crores	1981-82	235	235	100
Locomotives	Production	Number	1982	206*	206	100
Railway coaches	Production	Number	1981-82	1,073	1,073	100
Defence equipment including ordnance factories	Production	Rs. crores	1981-82	1,615	1,615	100
Endosulphan	Capacity	'000 tonnes	1981-82	1.60	2.80	57
	Production	'000 tonnes	1981-82	0.06	1.14	5
Nitrogenous fertilizers	Capacity	Lakh tonnes	1981-82	29.9	51.4	58
	Production	Lakh tonnes	1981-82	16.3	31.4	52
Saleable steel	Production	Mln. tonnes	1982-83	5.7	9.7	63
Machine Tools	Production	Rs. crores	1981-82	124	250	50
Hydro and steam turbines	Installation of power equipment	MW	1981-82	2,010	2,175	92
Transformers	Production	Mln. kva	1981-82	10.8	18.0	60
Professional electronics	Production	Rs. crores	1976	183	224	82
Railway wagons	Production	'000 number	1981-82	9.24	17.8	52
Wrist watches	Production	Lakh number	1982	42.4	64.0	66

* CMIE estimate.

Mln. = Million. Mln. kva = Million kilo volt ampere.

tkm = tube kilometres. ckm / core kilometres.

Source : Adapted from 'Public Sector in Indian Economy' published by Centre for Monitoring Indian Economy.

Table 2.11 : Manufacturing Enterprises Under BPE

Year	Capital employed (Rs. crores)	Gross Profit/ Capital employed (%)	No. of Enter-prises	Gross Margin (Rs. crores)	Internal Resources (Rs. crores)
1975-76	9,006	7.42	125	1,014	N.A.
1976-77	11,057	9.29	149	1,490	719
1977-78	12,065	7.58	155	1,489	708
1978-79	13,969	7.69	159	2,055	906
1979-80	16,182	7.60	169	2,401	1,030
1980-81	18,207	7.79	168	4,012	1,225
1981-82	21,935	12.10	788	5,184	2,261
1982-83	26,526	13.06	193	5,775	2,753
1983-84	29,896	11.84	201	7,138	3,282
1984-85	36,949	12.39	191	N.A.	4,410

Table 2.13). The rate of growth of output of public sector (manufacturing) is higher than the organized private sector in both decades. But there is a significant fall in the growth rate of the public sector in the second decade.

If we compare incremental capital to incremental output ratios in these two sectors, the picture that emerges is given in Table 2.14.

Table 2.12 : Capital Employed and Return on Capital in Major Industry Groups

Year	Capital Employed (Rs. Lakhs)	Gross Profit/ Capital Employed	Capital Employed (Rs. Lakhs)	Gross Profit/ Capital Employed
	STEEL		CHEMICALS	
1973-74	119433	1.8	33576	2.7
1974-75	138448	4.8	48446	4.4
1975-76	163651	3.9	53628	1.3
1976-77	200572	5.9	71937	1.1
1977-78	203174	3.2	81276	Loss
1978-79	195012	6.2	123513	3.0
1979-80	211577	3.3	193107	0.9
1980-81	234434	4.0	236039	0.2
1981-82	290314	4.5	236769	5.2
1982-83	326533	1.9	255875	6.7
	PETROLEUM		TRANSPORT EQUIPMENT	
1973-74	43815	17.2	30014	7.4
1974-75	52470	29.6	34898	7.9
1975-76	58107	25.9	38637	9.0
1976-77	80083	26.1	44108	8.6
1977-78	80107	32.5	46817	6.7
1978-79	134751	21.8	50853	5.6
1979-80	167385	20.6	56721	6.9
1980-81	271604	13.2	65578	5.3
1981-82	319341	38.1	80420	10.0
1982-83	397611	46.1	94800	9.8
	HEAVY ENGINEERING		MEDIUM AND LIGHT ENGINEERING	
1973-74	61612	7.1	23053	12.2
1974-75	74861	11.3	28583	12.4
1975-76	88344	12.0	38371	13.6
1976-77	81755	14.5	37703	15.0
1977-78	77526	5.5	42058	13.3
1978-79	82166	6.4	45683	13.8
1979-80	97837	5.9	55600	15.7
1980-81	98168	2.9	60639	12.5
1981-82	107364	8.0	72802	18.7
1982-83	125726	8.4	89979	17.4

Table 2.13 : Rates of Growth (%)

Period	Public Manufacturing	Private Manufacturing (organized)
I. 1960-70	10.76	4.51
II. 1970-80	6.02	4.63
1960-80	6.62	4.34

(with $\ln y = a + bt$ at 1970-71 prices.)

Source : Data on GDP. TPS (CSO).

Table 2.14 : Incremental Capital/Output Ratios in Manufacturing Sector

(at constant 1970-71 prices)

Period	Public	Private (organized)
1960-70	9.756	6.07
1971-80	18.62	7.93

Source : Computed from data on GDCF and GDP at 1970-71 prices in TPS, CSO, 1983.

The incremental capital-output ratio in the public sector is higher than that of the organized private sector and it is significantly so in the second decade. This is partly because of investment in heavy and basic capital good industries in the public sector. But the

low capacity-utilization, escalation of capital-costs due to inordinate delays in the implementation of projects are also important reasons for the rising incremental capital-output ratio.

As mentioned earlier, per worker NDP in the organized private manufacturing sector has been generally higher than in the public sector. To examine the position in different industries we have computed value added per employee in certain major industry groups in public sector manufacturing. We could not get similar and comparable data in the private organized sector. But for the public sector we have estimated the value added at constant prices for each industry groups as steel, transport equipment, chemical and pharmaceutical products, heavy engineering, medium and light engineering. For this purpose we have derived implicit deflators from NAS organized manufacturing value added data. The data on value added at current prices and employment, are taken from BPE reports. On the basis of this data, we have computed value added per employee at constant prices. All of these data may be found in Table 2.15. All the series are plotted in Graph Nos. 1.1 to 1.6. They give an idea about the fluctuations and/or spread of observations. Given the series of value added per employee for each of these industry groups, we have computed the growth-rates of labour productivity with semi-log regression. Table 2.16 summarizes these results.

Table 2.15 : Value Added, in Current and Constant Prices, Employment and Per Employee Value Added

Year	Value Added (Current Prices) Rs.lakhs	Value Added (Constant Prices) Rs.lakhs	No. of Employees	Value Added Per Employee (at Constant Prices)
STEEL				
1971-72	14,834	14,129	-	-
1972-73	18,643	16,295	1,42,279	11,453
1973-74	22,980	16,138	1,57,211	10,265
1974-75	31,552	18,236	1,60,777	11,342
1975-76	32,338	17,291	1,62,139	10,664
1976-77	51,025	26,506	2,03,648	13,016
1977-78	44,274	22,822	2,11,288	10,801
1978-79	38,987	18,227	2,10,923	8,639
1979-80	41,453	16,142	2,10,981	7,651
1980-81	50,036	18,169	2,30,362	7,887
1981-82	57,394	17,600	2,35,228	7,482
1982-83	62,860	17,054	2,45,692	6,941
TRANSPORT EQUIPMENT				
1971-72	8,249	7,674	-	-
1972-73	9,277	7,968	77,560	10,273
1973-74	11,467	9,247	79,190	11,677
1974-75	14,286	9,111	84,437	10,790
1975-76	16,343	9,568	88,684	10,789
1976-77	18,290	11,250	92,321	12,186
1977-78	18,422	11,733	93,689	12,523
1978-79	20,475	11,538	90,986	12,681
1979-80	23,393	11,161	89,907	12,414
1980-81	23,467	11,034	88,944	12,406
1981-82	34,176	12,645	95,755	13,206
1982-83	43,355	15,090	98,807	15,272

(continued)

Table 2.15 : (continued)

Year	Value Added (Current Prices) Rs.lakhs	Value Added (Constant Prices) Rs.lakhs	No. of Employees	Value Added Per Employee (at Constant Prices)
CHEMICAL AND PHARMACEUTIAL PRODUCTS				
1971-72	8,034	7,908	-	-
1972-73	8,833	8,416	52,341	16,079
1973-74	12,736	11,560	54,151	21,348
1974-75	13,808	8,185	56,808	14,408
1975-76	13,951	7,949	56,520	14,064
1976-77	17,214	10,049	60,320	16,659
1977-78	19,331	11,193	61,705	18,139
1978-79	25,942	14,640	62,149	23,556
1979-80	36,347	18,292	66,654	27,443
1980-81	42,177	17,486	69,879	25,023
1981-82	59,014	22,680	77,447	29,284
1982-83	73,569	27,328	79,095	34,550
HEAVY ENGINEERING				
1971-72	-	-	-	-
1972-73	12,176	10,747	86,335	12,448
1973-74	16,941	13,467	93,070	14,470
1974-75	26,184	16,871	1,01,464	16,628
1975-76	33,725	19,227	1,23,302	15,593
1976-77	38,327	21,777	1,25,011	17,420
1977-78	36,876	20,728	1,25,954	16,457
1978-79	45,188	23,884	1,30,809	18,259
1979-80	43,850	20,041	1,33,752	14,984
1980-81	40,326	16,393	1,38,951	11,798
1981-82	56,208	20,439	1,44,047	14,189
1982-83	62,158	21,346	1,45,630	14,658

(continued)

Table 2.15 : (continued)

Year	Value Added (Current Prices) Rs.lakhs	Value Added (Constant Prices) Rs.lakhs	No. of Employees	Value Added Per Employee (at Constant Prices)
MEDIUM AND LIGHT ENGINEERING				
1971-72	-	-	-	-
1972-73	8,249	7,281	60,141	12,106
1973-74	10,924	8,684	66,976	12,966
1974-75	12,094	7,792	71,685	10,870
1975-76	17,732	10,109	78,880	12,816
1976-77	19,759	11,227	85,800	13,085
1977-78	21,871	12,294	92,341	13,314
1978-79	17,630	9,398	96,906	9,698
1979-80	28,925	13,220	1,01,223	13,060
1980-81	28,838	11,723	1,02,698	11,415
1981-82	43,171	15,699	1,05,628	14,863
1982-83	50,879	17,472	1,08,886	16,046
PETROLEUM				
1971-72	-	-	-	-
1972-73	-	-	38,522	-
1973-74	-	-	39,921	-
1974-75	27,525	14,594	44,681	32,663
1975-76	33,522	16,305	47,427	34,379
1976-77	42,972	20,385	53,104	38,387
1977-78	74,087	34,566	54,585	63,325
1978-79	77,984	34,661	56,666	61,167
1979-80	87,786	33,698	60,131	56,041
1980-81	1,02,989	32,301	68,774	46,967
1981-82	2,06,584	63,222	78,023	81,030
1982-83	3,12,032	90,905	84,278	1,07,626

Source : BPE Reports.

Table 2.16 : Rate of Growth of Per Employee Value Added (Constant Prices)

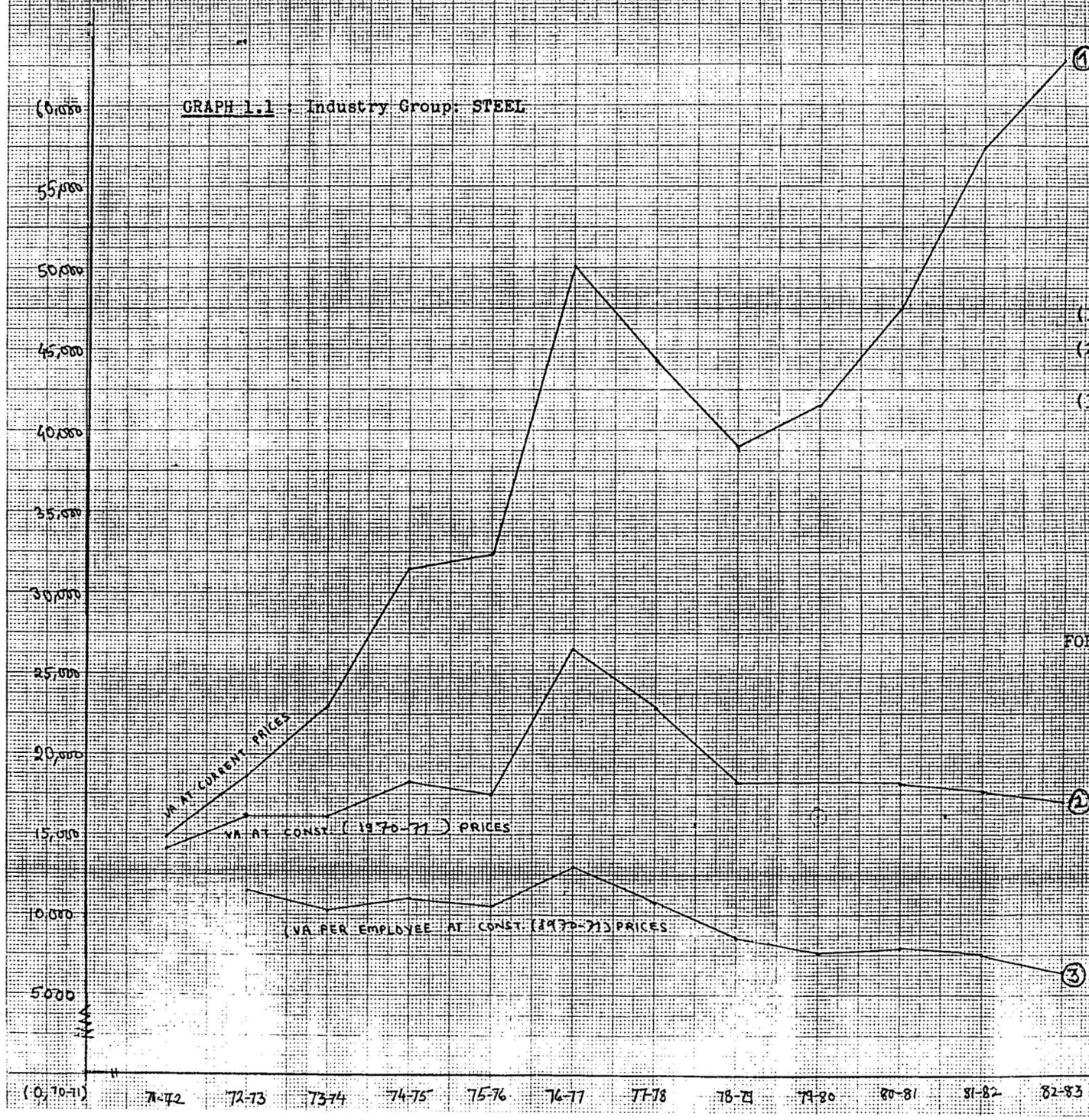
[In PEV = a + bt]

Group	
Steel	- In PEP = 9.478136088 - 0.053934967 T t = 4.751324751 r^2 = 0.715624655
Transport Equipment	- In PEP = 9.227175217 + 0.029375973 T t = (5.61732403) r^2 = (0.778075186)
Heavy Engineering	- In PEP = 9.636936746 - 0.002940216 T* t = r^2 = 0.0053739
Medium and Light Engineering	- In PEP = 9.34410161 + 0.016726425 T* t = (1.301902508) r^2 = (0.15848135)
Chemical and Pharmaceutical Products	- In PEP = 9.490907479 + 0.076620466 T t = (4.57676954) r^2 = 0.699467248
Petroleum	- In PEP = 10.2594237 + 0.1270509 T t = 4.701940377 r^2 = 0.759518294

PEP = Per employee product or value added. T = Time.

t = 't' value. * Not significant at 5% level.

GRAPH 1.1 : Industry Group: STEEL



(1) Value Added at Current Prices

(2) Value Added at Constant (1970-71) Prices

(3) Per Employee Value Added at Constant Prices.

X Axis : 2 cm = 1 year

Y Axis : 2 cm = 5000 Lakh Rs.

FOR PER EMPLOYEE VALUE ADDED:

Y Axis : 2 cm = 5000 Rs.

GRAPH 1.2 : Industry Group : TRANSPORT EQUIPMENT

(1) Value Added at Current Prices

(2) Value Added at Constant (1970-71) Prices

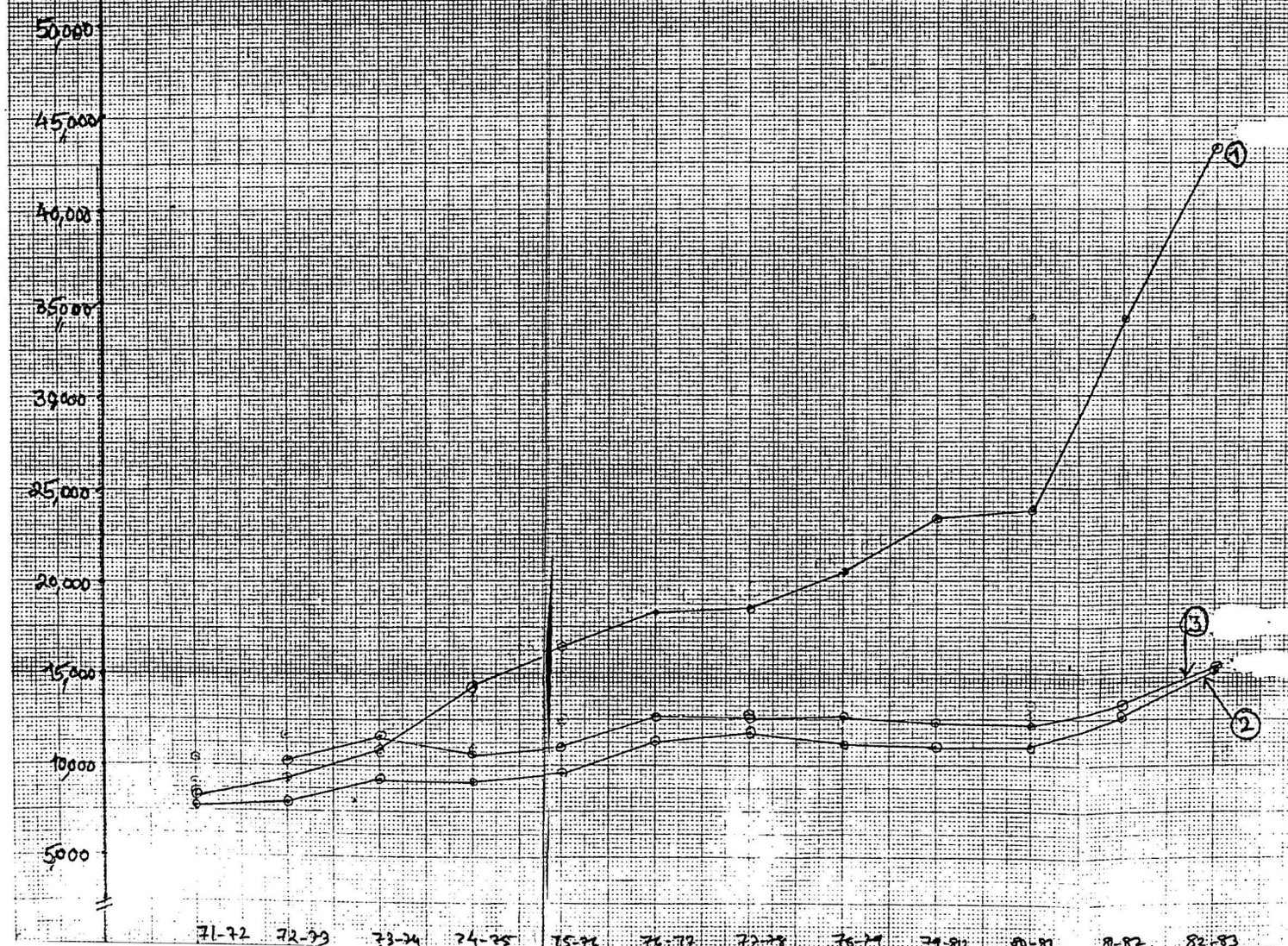
(3) Per Employee Value Added at Constant Prices

X Axis : 2 cm = 1 year

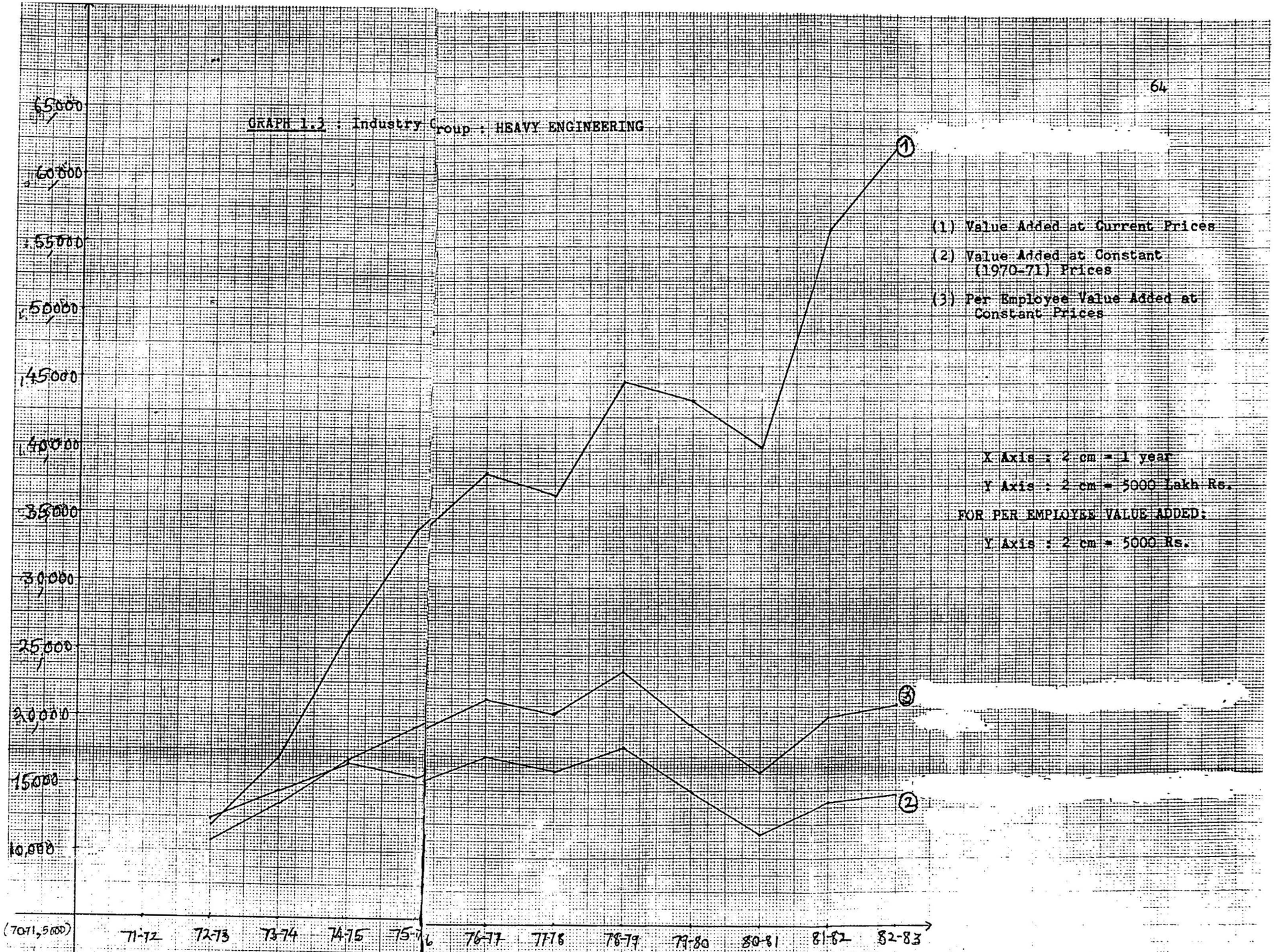
Y Axis : 2 cm = 5000 Lakh Rs.

FOR PER EMPLOYEE VALUE ADDED:

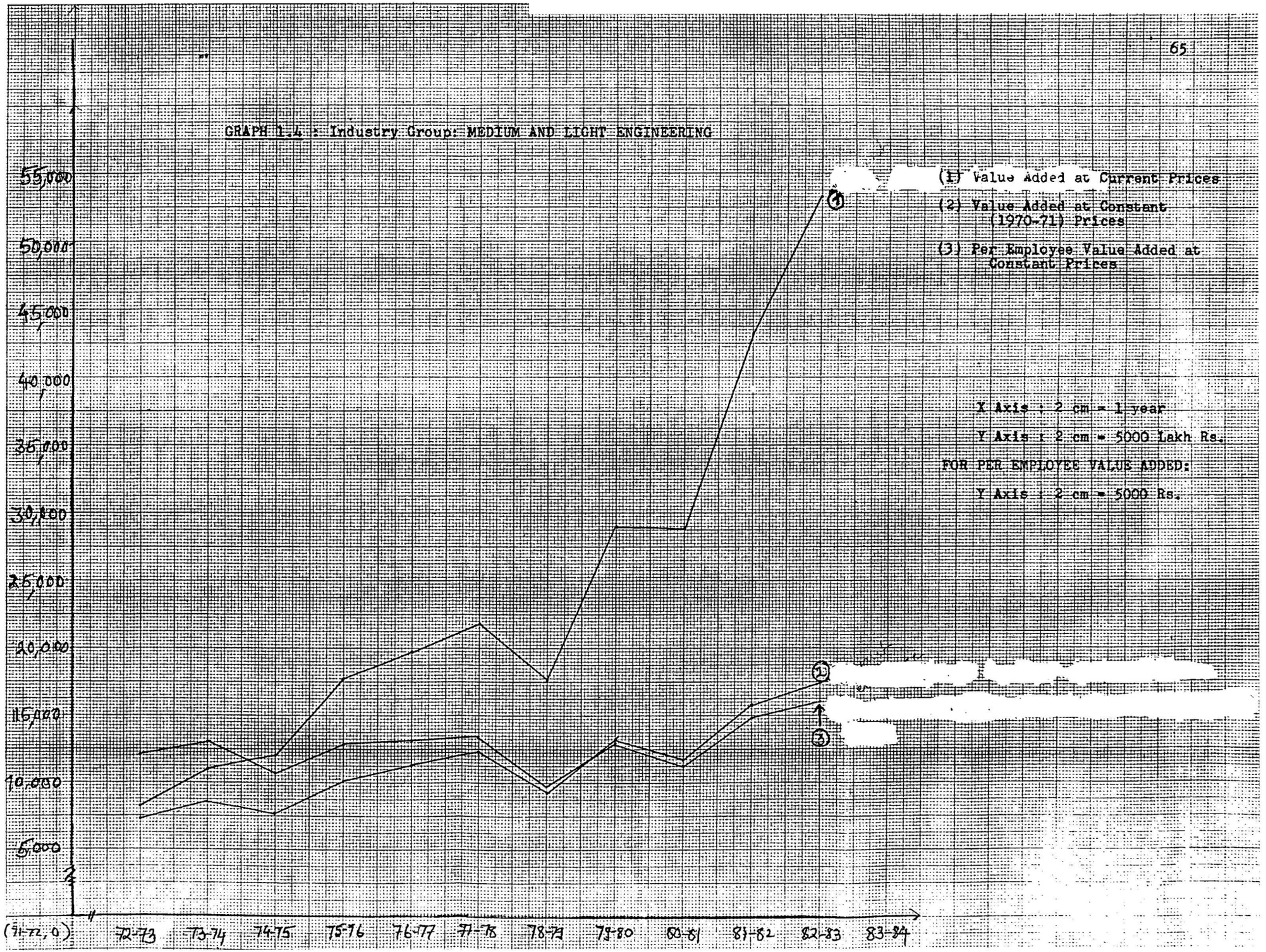
Y Axis : 2 cm = 5000 Rs.



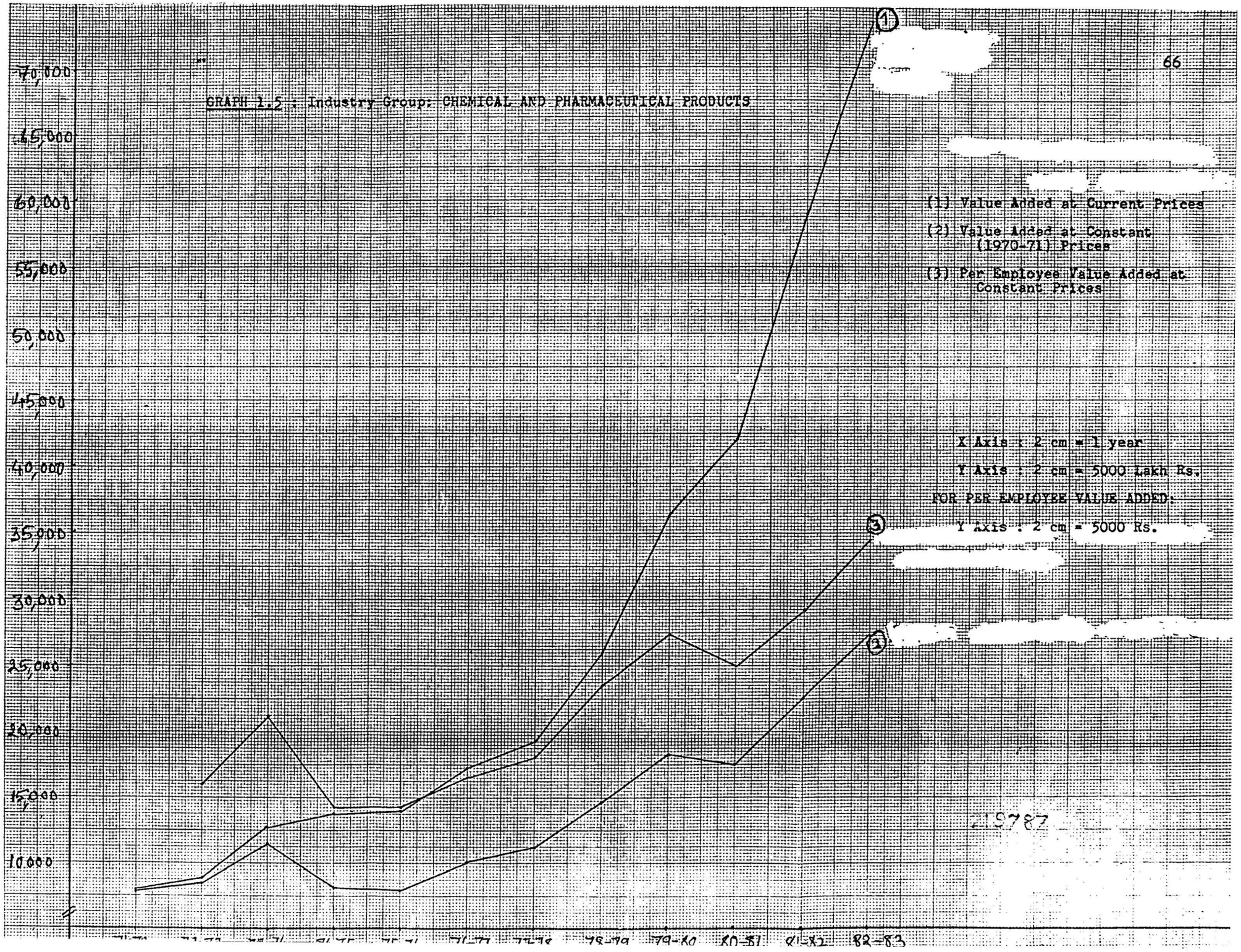
GRAPH 1.2 : Industry Group : HEAVY ENGINEERING



GRAPH 1.4 : Industry Group: MEDIUM AND LIGHT ENGINEERING



GRAPH 1.5 : Industry Group: CHEMICAL AND PHARMACEUTICAL PRODUCTS



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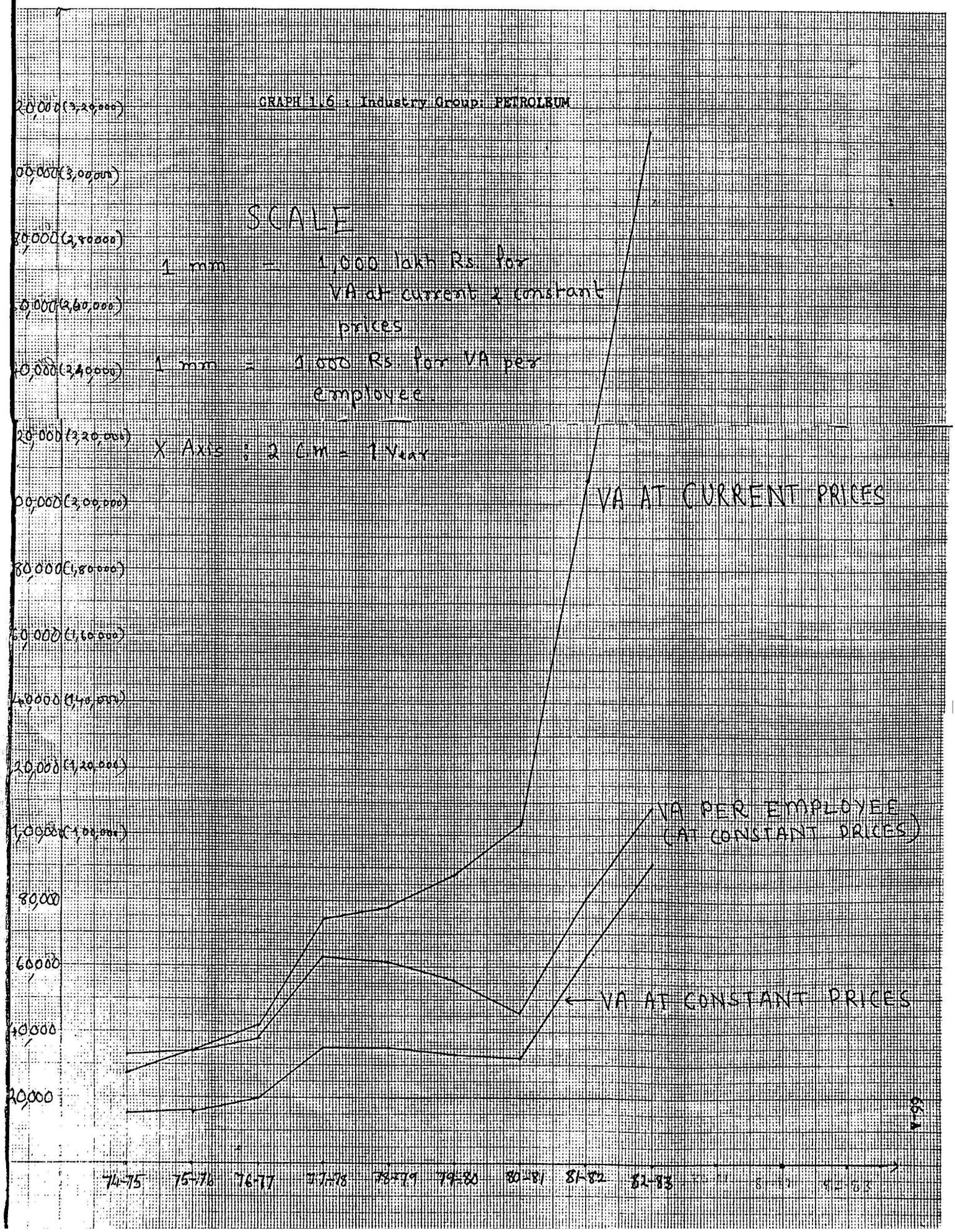
GRAPH 1.6 : Industry Group: PETROLEUM
SCALE
1 mm = 1,000 lakh Rs. for VA at current & constant prices
1 mm = 1,000 Rs. for VA per employee
X Axis : 2 Cm = 1 Year
VA AT CURRENT PRICES
VA PER EMPLOYEE (AT CONSTANT PRICES)
VA AT CONSTANT PRICES
2,20,000
2,00,000
1,80,000
1,60,000
1,40,000
1,20,000
1,00,000
80,000
60,000
40,000
20,000
74-75
75-76
76-77
77-78
78-79
79-80
80-81
81-82
82-83

If over the period, value added per employee shows a positive increase or positive rate of growth we may infer that enterprises have been using their given labour force more effectively. Obviously this measure has some limitations. The increase in the value added may be due to additional capital or better use of existing capital, or better efficiency of workers and management or due to combined effect of some or all of these. In order to account for each of these possibilities separately we require a series of capital stock employed in each industry. The estimation of capital stock is extremely problematic and difficult, and we have not attempted it. Hence it will not be possible to account for each source of growth separately. Yet the improvement in value added per worker in some sense reflects the overall productive ability and efficiency of the enterprise.

It may be noted that in the case of engineering groups of enterprises, there are some extreme fluctuations in value added series. Moreover in case of heavy engineering there is an evidence of decline in value added per worker. This group has a marked decline in value added at current prices in 1977-78, 1979-80, 1980-81; and at constant prices it has remained always below the 1976-77 level (except for 1978-79) and has been fluctuating. On the other hand, employment has been rising. In the case of medium and light engineering enterprises, the years

1974-75, 1978-79 and 1980-81 show a decline in value added at constant prices and per employee value added at constant prices.

In the other industry groups, the regression exercise yields unambiguous results. In steel industry, value added per employee has declined at a rate of 5 per cent annually, particularly since 1976-77. Thus, in the second half of the seventies, in steel, heavy engineering and medium and light engineering, productivity per worker declined or fluctuated widely.

On the other hand in the case of transport equipment, chemicals and pharmaceutical products, the productivity per employee rose at the rate of 3.00 and 7.75 per cent per annum respectively between 1972-73 and 1982-83. In the case of petroleum group of industries, value added per worker has on an average risen at 12 per cent per annum during the same period.[9]

Altogether it seems that in the seventies, especially during the latter half there was a lowering of performance though the situation differs from industry to industry. This is also reflected in the gross profit to capital employed for various industry groups over years. The overall impression is that of a partial success. The public sector in manufacturing performed a difficult task of modernizing a traditional economy, in a relatively short period of two and a half decades. It is doubtful

that this could have been done with the private sector's effort and initiative alone. But the public sector could have achieved more.

2.2.2 Railways

The railways have long been a monopoly of the Government of India. It is a major transport infrastructure that moves various items of industrial importance such as coal, steel, iron ores, etc., over long distances. The development and performance of this sector has been aptly reviewed and analysed by the Rail Tariff Inquiry Committee. In its observations relating to the physical performance of the railways, the Committee remarked that, "both as compared to previous performance and as compared to important foreign railways, the operating efficiency of the Indian railways can certainly not be considered inadequate. This however is not to say that there is no scope for better utilization of resources."[10]

One major weakness of the Indian railways has been over-aged assets, undesirably low speed in replacement of tracks and very slow expansion. The reason is the inability of Indian railways to find internal and external resources for investment. The financial performances and position of the railways has been unsatisfactory. The Tariff Committee has emphasized two elements, namely, tariff policy and the depreciation or reserve fund policy. Moreover, the railways have been losing their share in total investment almost

Table 2.17 : Plan Outlays on Railways and Share of Railways in Plan Outlays

Period	Total Public sector Outlay	Outlay for transport and communication	Outlay for Railways	Outlay for transport %	Outlay Railway as Percentage of Public sector outlay	Outlay for Railway as Percentage of Transport outlay
First Plan (1951-56)	2,167	725	424	83.5	19.6	58.5
Second Plan (1956-61)	4,992	1,581	1,044	31.7	20.9	66.0
Third Plan (1961-66)	8,937	2,472	1,686	27.7	18.9	68.2
Inter Plan (1966-69)	6,879	1,476	763	21.5	11.1	51.7
Fourth Plan (1969-74)	16,273	3,574	1,428	22.0	8.8	40.0
Fifth Plan (1974-79)	29,571	6,881	2,076	23.3	7.0	30.2
Sixth Plan (1978-83) Revised	71,000	11,178	3,400	15.7	4.8	30.4

Source : Rail Tariff Inquiry Committee Report, 1980, p. 37.

continuously. Table 2.17 shows outlays on railways as a proportion of total public sector outlay and as a proportion of outlays on transport and communication. The proportion of outlays on railways as a percentage of total public outlay has fallen from 19.6 to 4.8 per cent. Similarly, outlays on railways as a percentage of outlays on transport has fallen from 58.5 to 30.4 per cent. This is partly an effect of the promotion of, and the emphasis on, non-railway transport, whose growth continued until the oil-crisis of 1974 when it was realized that for long distance movements, the railways are more energy-efficient. The neglect of investments for maintenance, and the generally declining investment in this sector since the Third Plan, has been mentioned as a major factor contributing to industrial stagnation.

2.2.3 Public Sector in Electricity Generation

The development of electricity in the last thirty years is almost entirely due to the effort of the public sector. The growth has been phenomenal. The installed generation capacity increased thirteen-fold from 2300 MW in 1950 to 29217 MW in 1978-79. The number of villages electrified was 3051 in 1950, and it reached 2,33,000 in 1980. Generation and distribution of electric power has been reserved for the public sector. There have been a few private sector companies engaged in the generation and distribution of power and they have been allowed to grow,

although their growth is highly regulated. The public sector consists mainly of the State Electricity Boards (SEBs), and they account for 70 per cent of power generation, and almost the whole of distribution. About 18 per cent of generation is contributed by corporations owned jointly by two or more states, or the central government and state governments. The SEBs are generally statutory bodies like companies or corporations, but in some states they are operated as departmental enterprises.

Table 2.18 provides data on generation in the public and private sectors. As already noted that the public sector contributes about 85 per cent of the GDP from this sector (Table 2.1). The rate of growth of output (GDP 1970-71 prices) was 12.81 or 13 per cent per annum during 1960-70. But in the following decade (1970-71—1979-80), it decelerated to 6.82 or 7 per cent. Further, the incremental capital output ratio in the second period (1970-80), was 24.92, as compared to 15.11 in the first period.

Table 2.19 provides the proportional allocation to power in the several plans. It will be seen that it has steadily grown over the years. Yet the growing demand and operational efficiencies have been responsible for the perpetuation of shortages. Table 2.20 gives the power requirement and the actual supply.

There are various reasons for inefficiency in this sector as reflected in physical shortages, rising incremental

Table 2.18 : Capacity (MW)

	1950	1960-61	1970-71	1977-78	1978-79
Public sector	628 (36.66)	3,297 (70.85)	13,221 (89.88)	22,375 (94.53)	25,295 (94.80)
Private sector	1,085 (63.34)	1,365 (29.14)	1,488 (10.12)	1,294 (5.47)	1,389 (5.20)
Total	1,713 (100.00)	4,653 (100.00)	14,709 (100.00)	23,669 (100.00)	26,682 (100.00)

Note : Figures in brackets are percentages.

Source: RCP, p. 7.

Table 2.19 : Outlays on Power

(Rs. crores)

Plan (Period) (1)	Total Plan (2)	Power (3)	Percentage (3/2 x 100) (4)
First Plan	1,960	260	13.3
Second Plan	4,672	460	9.8
Third Plan	8,573	1,252	14.6
Annual Plans (1966-69)	6,756	1,223	18.1
Fourth Plan	16,160	2,931	18.0
Fifth Plan	39,306	7,540	19.0
Annual Plan (1979-80)	12,600	2,182	17.0
Sixth Plan	97,500	19,265	20.0

Source : BPE Report 1983-84.

Table 2.20 : Supply and Shortages of Power

Year	Anticipated Requirement	Supply	Shortage	Percentage Shortage
1974-75	77600	66647	10953	14.1
1975-76	83508	74909	8599	10.3
1976-77	88489	83365	5124	5.8
1977-78	102180	86343	15837	15.5
1978-79	108535	97349	11186	10.3
1979-80	118370	99302	19068	16.1
1980-81	120118	104932	15186	12.6
1981-82	129245	115274	13971	10.8
1982-83	136849	124225	12624	9.2
1983-84	156812	139877	16935	10.8

Source : BPE Report 1983-84.

capital-output ratios, deceleration in the rates of growth of output and financial losses. The Rajadhyaksha Committee on Power has investigated this problem in detail. According to that Committee, among the major reasons for inefficiency are (a) Delays in project implementation, especially in hydel-projects, (b) Inadequate investment in transmission and distribution which result in heavy transmission losses, (c) Tariff rates lagging behind rising costs, (d) Low utilization of capacities, (e) Financial losses due to agricultural and rural electrification, and (f) Poor collection of revenue and mounting arrears.[11]

To sum up, we may say that public activity in this

sector has made a significant contribution to the process of economic development, but still there is much room for improvement in its operations.

2.3 Conclusion

The public sector accounts for more than one-fifth of the GDP and nearly one-half of the GDCF in the Indian economy. It has played a significant role in developing the modernized and organized segments of the economy. It accounts for 62.06 per cent of the total NDP originating in the organized sector and 63 per cent of total organized employment. However, its share in investment (and therefore the pace of its expansion) has not only been uneven between sectors but also within the sector, between periods. The deceleration or imbalances in investments in certain sectors like railways and electricity have been important reasons behind industrial stagnation since the mid-sixties.

Public sector savings as a proportion of public sector investment has increased in the fourth period; after decline in the second and third periods. But in certain crucial and important sectors like non-departmental manufacturing, electricity, and transport other than railways there have been negative savings in most years. Consequently, internal resources generated as a proportion of total financing required for accumulation, have not been satisfactory, and have fallen short of original expectations.

Growth of labour productivity, as judged by the per employee value added at constant prices, shows different trends in different industry-groups. In transport equipment, chemical products and petroleum, and oil production, labour productivity has increased. But in two other crucial groups, steel and heavy engineering, labour productivity declined.

The public sector was established in those fields where not only effort of pioneering nature was required but also heavy capital employment was needed. Also returns might not be quick. Its role in developing such basic and heavy industries was important and indispensable. It is difficult to imagine a diverse and capital-intensive industrial structure evolving with the effort of the private sector alone. Its contribution towards increasing self-reliance in oil production is especially commendable. However, in the sectors of manufacturing as a whole as also in electricity and transport, it could have achieved a better level of efficiency. For a variety of managerial, administrative and policy reasons that have been suggested, it failed to realize its potential in both real and financial terms.[12] This is reflected in the decline in the rates of growth of its product, inadequate internal resources for financial accumulation and rising incremental capital-output ratios.

However, the review taken in this chapter relates

to its role at an aggregate or macro level. An evaluation and appraisal of its performance at the level of individual enterprises, or at the level of industry groups, requires a separate and different type of inquiry, technique, indicators and information. We have attempted to review some of these indicators and aspects in Chapter IV. But before we turn to these aspects, it may be useful to review problems connected with pricing that are faced by most public sector enterprises.

References

1. Rao, V.K.R.V. National Income of India: 1950-1980. Sage Publishers, 1984, p. 64.

2. Mridul Eapen. "Employment in Public Sector," State Enterprise, Vol. III, No. 3, July-September 1984, pp. 282-283.

3. See Srinivasan, T.N., and Narayan, N.S.S. "Economic Performance Since the Third Plan and Its Implications for Policy," Economic and Political Weekly, Annual Number 1977. They have argued that real public investment during 1965-1975 was below the long-term trend of 1951-1975.

4. The GDCF in Railways in 1970-71 prices for this period was as follows:

	Rs. Crores
1965-66	452
1966-67	312
1967-68	283
1968-69	240
1969-70	189

Taken from TPS, CSO, 1983.

5. See Ahluwalia, Isher J. Industrial Stagnation in India. Oxford University Press, 1985, Chapter 5, pp. 72-108.

6. See Sundarrajan, V. and Thakur, S. Public Investment, Crowding-out and Growth: A Dynamic Model Applied to India and Korea. Staff Papers, IMF, 1980; and Krishnamurthy, K. "Inflation and Growth: A Model for India," The Indian Economic Review, Vol. XIX, No. 1, January-June 1984.

7. Krishnamurthy, K., op.cit., pp. 52-53.

8. It is curious and surprising to note that the gross profit to capital employed ratio as per BPE reports

appears much higher than gross profit to net assets ratio from RBI studies. Between capital employed and net assets the latter will generally be lower because 'capital employed' includes both depreciation and working capital together with net block. Therefore the denominator of gross profits to net assets is lower and for same level of gross profits the ratio should appear higher. But surprisingly this ratio as per RBI studies, is low. This is probably because of the differences in coverage, definitions or procedures and perhaps due to differences in the vintages of net block of the enterprises covered. Moreover the weights each enterprise in profits and capital employed will keep on changing due to fluctuations in output and working capital. Hence under the situation of changing coverage over time (and also between two sources of data) one cannot really predict direction of difference between these two ratios at an aggregate industry-group level. Moreover, COPU 6th Lok Sabha, 28th Report, p. 59, has criticised BPE, for the divergence between profit and loss figures as per audited accounts published in C&AG reports and those published by BPE. If RBI estimates are based on audited reports then it may differ from BPE reports. In any case, this needs further inquiry and detailed comparative analysis, but this is beyond our present scope.

9. However we should note that, a persistent upward revision of prices of petroleum and related products is one important factor in this impressive rate of growth.

10. Government of India. Report of the Rail Tariff Inquiry Committee, p. 33.

11. Government of India, Department of Energy, Committee on Power (Chairman V.G. Rajadhyaksha), pp. 80-82.

12. One of the important reasons that is often discussed is erosion of managerial autonomy and initiative due to undesirable political interference. Similarly, the opinion of professional or market expertise is often disregarded in the decision about size and further expansion or diversification of industry. For discussion of these aspects, see Patil, S.M. and Nigam Raj. Public Enterprise Management: Constraints and Autonomy. Documentation Centre for Corporate and Business Policy Research, New Delhi, June 1981.

CHAPTER III

PRICING PROBLEMS AND PRACTICES

The importance of prices is obvious to any enterprise. In the case of public enterprises pricing involves a few special considerations. Firstly many times "government produces and/or supplies goods which cannot be provided efficiently by the private firms because production is subject to decreasing costs, e.g. postal services, water and electricity supplies, etc."[1] Moreover there are some services or facilities provided by the government where a customer cannot and should not be priced out.

Secondly, when public enterprises often operate under conditions of absolute monopoly (natural or otherwise), they cannot use their monopoly-power to maximize profits by restricting output at the expense of the consumer. On the contrary it is to eliminate such threat of monopolistic exploitation, that the industry is taken in the public sector. At the same time, public enterprises cannot afford to completely ignore commercial viability. Thus, it has to strike a very difficult and a delicate balance between social commitments and responsibilities on the one hand, and commercial principles of viability and profitability on the other.

These problems in the pricing of the output of public

enterprises have been discussed since long. Several theories and principles have been suggested and debated from marginal cost pricing, average cost pricing, peak-load pricing, to the green tariff principle, the Crosland criterion, etc. Moreover, it should be pointed out that many of them discuss pricing of public utilities and not the 'private goods' produced by public enterprises. It is not our intention here to examine and evaluate each of them in a detailed manner.

Among all those mentioned above, the principle of 'marginal-cost pricing rule' has been most widely discussed. This principle asserts that given the assumptions of perfect mobility of factors, perfect competition and information, and the 'first best initial Paretian Optimal distribution of wealth and resources'; setting prices equal to marginal cost even by public enterprises would lead to the fulfilment of optimum conditions. If this principle is applied to decreasing cost industry, enterprises would obviously incur losses, which have to be made good by subsidies from the government. If one of the "first best Pareto conditions" are violated, this principle cannot guarantee the 'best optimal solution'.[2] This criticism is most forcefully brought out by the Second best Theorem of Lipsey and Lancester.[3]

There are other criticisms of the 'Marginal Rule' which focus on definitional and operational ambiguities:[4]

(1) Choice of time-horizon or perspectives i.e. whether short term or long term marginal cost (2) Specifying incremental block or marginal unit of output (3) Identification of marginal cost when a set of differentiated products is produced in the same plant and some of their costs are common. Nove has voiced criticism based on similar grounds.[5] The existence of unrealistic assumptions like perfect markets on the one hand, and these operational difficulties on the other, make the proposition of marginal cost pricing very weak. As Crosland remarks: "To pursue an ideal which in practice has little meaning by applying a ratio which cannot conceivably be measured, and in doing so, to accept a widespread burden of losses while throwing over any realistic check on investment - this is a poor policy for the economist to be found urging on the politician and the administrator."[6]

Some authors have suggested the principle of '<u>average cost pricing</u>' as an alternative solution.[7] If the enterprise charges a price which is equal to its average cost (which by definition includes "normal economic profit"), then consumer will have to bear not only 'marginal cost' but a part of all types of costs and all the costs of the enterprise are covered. Besides, it is easier to fix price on this principle. Hence it is widely adopted as a principle of determining prices. Major disadvantage of this method is that it may easily conceal cost-inefficiency and the consumers

may suffer. Policy-makers will, therefore, have to check and monitor cost efficiency.

Crosland (1950) suggests a solution which involves a mixture of competition (though not perfect in the rigorous neo-classical sense, but in the larger and widely accepted sense of the term), coupled with monopoly and political regulation which keeps the structure (i.e. product-mix and size) of the industry in mind. According to him, "ignoring the public utility (where it is assumed that either two-part tariff or average cost pricing is adopted) there are two cases to be distinguished: (1) where the physical product is homogeneous, the board (managerial and political) initially fixes a price to equate current demand and supply and thereafter expands or contracts the industry until the price which sells the current output is equal to average cost of the marginal plant; the plant managers at all times equate the marginal cost to price, (2) where the physical product is differentiated, the plant managers equate the long run marginal revenue and marginal cost (subject to a right of veto by the board), while the board will expand or contract the industry as a whole, and the production of separate articles, until average costs are equal to average revenue both for individual plants and individual products," and moreover, "... in all cases, new investment will be undertaken if expected receipts (on the basis of the above price rules) cover full expected costs."[8]

These propositions have been criticised on the following grounds: (1) equating marginal cost to prices in each plant need not necessarily mean maximum or optimum utilization of plant capacity (i.e. it would imply either under-utilization or over-utilization), (2) there is a danger that managers would exploit their monopoly position in the short-run. Even in the long run, intra-marginal units would earn a rent at the expense of consumers who would have to pay the full costs of a marginal (high cost) firm, (3) the assumption that the market by itself can provide the best solution is an uneasy and unverifiable proposition, (4) profit maximization is not the sole aim of setting up public sector enterprises.[9]

It may be noted in all this that there are some elements common to all the three theories: (1) The enterprise should be able to cover its costs and need not subsidize consumers through its losses, unless it is consciously decided as a policy. (2) Care should be taken to ensure that the enterprise is cost-efficient and does not pass its inefficiencies on to consumers in the form of higher prices. Therefore, the 'coverage of cost' should be linked to certain minimum norms of performance. (3) It must take into account the ability or capacity of the consumer to pay. (4) The pricing procedure should be such that it guarantees a certain rate of return or surplus to enable the enterprise to undertake replacement and expansion-

investments. (5) It should be flexible towards market conditions, capable of clearing markets, and indicate future expansion or contraction of capacities.

In India, the principles, procedures and practices governing the pricing of public sector output have been diverse and there is no method common to all industries. Notwithstanding the diversity of methods and regulations, we may say that the government has accepted (at least in principle) some of the above-mentioned elements i.e. (1) adequate rate of return, (2) covering all admissible and legitimate costs, (3) protection of consumer interest, (4) market flexibility and orientation. In other words: "When public enterprises run efficiently and follow a proper price policy for their goods and services, the results of their operations must be reflected in larger earnings and surpluses."[10] Moreover, "pricing policies of public sector enterprises have to be broadly guided by the paramount consideration of providing not only an adequate depreciation and return on capital, but also necessary surplus for further expansion."[11] Yet in a similar vein, "central government non-departmental enterprises which now earn a post-tax rate of return of 4.8 per cent on investment should aim at earning 10 per cent per annum. In determining administered prices, the government has already accepted 10-15 per cent (net of taxes) as a fair return."[12]

The government in its guidelines on pricing policies

states that, (i) for enterprises which produce goods and services in competition with other domestic producers, the normal market forces of demand and supply will operate and their products will be governed by prevailing market prices, (ii) for enterprises which operate under monopolistic or semi-monopolistic conditions, the landed cost of comparable imported goods would be the normal ceiling. Within this ceiling, it would be open to enterprises to have price negotiations and fix prices at suitable levels. If the landed cost is found or believed to be artificially low or in other exceptional circumstances, it is considered necessary to have higher prices, then the matter should be referred to the Administrative Ministry and in consultation with Ministry of Finance and the Bureau of Public Enterprises.[13]

Similarly, for several years there has been a scheme of 'price-preference' to promote and force trade or linkages between public enterprises. Accordingly, it is said that, Ministries, Government, Departments, and public sector enterprises should invariably purchase their requirements from public sector undertakings to the maximum possible extent. Quality requirements, reasonable delivery schedules, of course, are to be enforced: "Price preference not exceeding 10 per cent will be admissible to public sector undertakings and price preference even upto 10 per cent cannot be permanent or taken for granted. Every effort should be made to bring down costs and achieve competitiveness."[14]

Thus, the need for efficient or optimal pricing has been already accepted in principle by the Government of India. Yet in practice, there are several deficiencies and failures. Though the government has accepted these principles, it has not been able to perform well in many respects. These include: (1) Evolving minimum physical and financial norms to determine legitimate costs. Consequently many times even the legitimate charges are not covered. For example, both, the Report of Committee on Power and Report of the Rail Tariff Inquiry Committee, have observed that the rate of depreciation and provision for depreciation were inadequate by any commercial standard. Similarly both of these reports point out that the prices have lagged behind the costs. And (2) Providing simpler in-built adjustment mechanism or flexibility in administered prices to respond to changing demand conditions and input prices. Failure here is partly political in nature. There has been a general reluctance to raise prices, of public utilities like railways, road transport or electricity. This results in severe losses and (if prices are not raised at the right time) eventually the government is compelled to raise prices in large doses.

This rigidity of the administered prices in major inputs like electricity, transport, coal, and steel have repercussions all over the economy.

Public sector enterprises other than public utilities

may be classified by the nature of their market and the pricing policies which they should adhere to:

(1) Enterprises operating in the open market i.e. in competition with private enterprises e.g. Hindustan Machine Tools, Modern Bakeries, etc.

(2) Enterprises operating in an international market environment e.g. Air-India, Shipping Corporation of India, etc.

(3) Enterprises selling their entire product to the Central Government, e.g. Indian Telephone Industries, Hindustan Cables, Hindustan Aeronautics, etc.

(4) Enterprises which sell their product mainly to Central or State Governments or other public enterprises, e.g. Bharat Heavy Electricals, Mining and Allied Machinery Corporations, Bharat Earth Movers, etc.

(5) Enterprises which operate under total price control (including the dual price system and prices fixed by awards or arbitration, e.g. Fertilizer Corporation of India, Indian Oil Corporation, Hindustan Antibiotics, Cement Corporation of India, etc.).[15]

The first two categories have to face competition in the market. If there are near-perfect substitutes provided by the private sector, then the price must be competitive. For the other categories, it is necessary to have a norm of expected and acceptable level of efficiency. The need for such an indicative criterion is urgent when

prices are fixed mainly by negotiation - as in the third and fourth categories of enterprises. The usual practice here is to follow a 'cost-plus-return' approach. If the customer must not pay for inefficiency, the cost-level to be used must be fixed at a certain norm or 'minimum performance level' e.g. capacity utilization at 80 per cent level.

At present there is no special statutory body for fixing prices of public enterprises' output. Generally the BICP is required to undertake cost studies in cases where it feels such an investigation is desirable, and advise the government accordingly. The Director-General of the BPE is associated with the work of the BICP and is associated with it in connection with cost studies involving public enterprises. The recommendations of the BICP are however not mandatory and acceptance of their proposals finally depends upon the government.[16]

In the event of a dispute between different public enterprises, the BPE can assist and help them reach a settlement. The other option is the Ad-hoc Price Committees appointed by the government. The BPE plays a major role in these committees partially because the Director-General of the BPE is often either the chairman or an important member. The BPE also provides secretarial and cost-estimation services to the committee. Thus, the BPE is a managerial supervisory body for both fixing prices as well as helping and guiding management to reduce their cost-levels and

increase cost-controls. There are unfortunately very few studies which have dealt with cost-management in public enterprises.

The COPU, (4th Lok Sabha, 67th Report, and 6th Lok Sabha, 28th Report) had inquired into the cost management and cost-control system in public enterprises. Both these Reports highlight the "absence of a satisfactory cost control scheme" in many public enterprises.[17] The COPU (6th Lok Sabha) quotes the Comptroller and Auditor General's (C&AG) Reports that in many companies "standard costs for main products had not been fixed and standard costing system not introduced", and in many of them, "there was no system of ascertaining idle time for labour and machinery, and consumption of raw materials was more than standard estimates where they were available."[18] The COPU has taken the BPE to task for its failure to monitor and guide enterprises under its purview in this respect.[19]

Thus, the absence of cost norms, inadequate provision for depreciation and replacement investment, rigidity of administered prices in adjusting and responding to changing market conditions, political unwillingness to undertake upward revisions of administered or controlled prices even when they are justified, are the major problems of pricing in public enterprises.

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CHAPTER IV

SELECTED INDICATORS AND ASPECTS OF PERFORMANCE

4.1 Choice of Indicators and Aspects of Performance

In this chapter we proceed to review the measures and indicators of performance of public enterprises. Performance is a complex and controversial matter and it is difficult to judge with the help of a single indicator. There are many managerial, administrative and organizational factors which affect performance. The widely debated issues like autonomy versus accountability, reforms to improve the initiative and professional orientation of management, etc., are obviously important. But we shall restrict ourselves to a few selected indicators and aspects of performance.

Anu indicator of performance and efficiency presupposes the existence of clearly specified objectives. There can be more than one objective, and these may be mutually complementary or conflicting, measurable and non-measurable. This is particularly important in the case of public sector enterprises, because they are expected to achieve multiple commercial and non-commercial objectives and some of them are often in conflict. An obvious example of commercial versus non-commercial objectives lies in operating uneconomic routes in underdeveloped or far off regions, in railways or road transport system.

Often the social and non-commercial objectives that underlie the establishment of a public enterprise are stated in very vague and general terms, which make them difficult to quantify. If it is possible to judge the costs of certain non-commercial objectives then it may be possible to determine an operative policy and judge performance. But if no such estimate or approximation is possible, then one can only guess and speculate.[1]

Several COPU reports as well as the Administrative Reforms Commission have time and again recommended that objectives and commitments of each enterprise should be clearly specified. But neither government nor the BPE have taken any steps in this direction. Both of them continue to reiterate their (i.e. public enterprise) commitment to "social objectives" in very general terms. They have not attempted to work out the costs of non-commercial objectives. Yet this has not prevented them being used as causes explaining alleged failures in financial terms.

We have chosen certain indicators, which in our view, focus on certain important aspects of the functioning of public enterprises. First, there are the <u>financial indicators</u>. These are usual financial ratios used in conventional corporate appraisal and analysis, e.g. Gross Profit to Sales, operative surplus or gross margin to net block, etc. We shall attempt a comparison of the private sector

and the public sector in terms of these ratios. Second, are the non-financial indicators such as factor productivity and capacity utilization. We shall also try to evaluate the role and contribution of public enterprises in the development of technology.

4.2 Financial Ratios as Indicators

The important among the financial ratios are profitability ratios, e.g. Gross Profits to Assets or Capital employed, earnings per share, or Profits to Net worth, etc. Several authors have objected to the use of such profitability ratios for assessing the performance of public enterprises. There are two types of objections. In one their applicability and usefulness is challenged. It is argued that many public enterprises have complete monopoly, (or high monopolistic control) in the industry and consequently, high profitability may be due to its pricing strategy and may not necessarily indicate cost-efficiency as it would do under ideal competitive conditions.

In the second type of objection their conceptual validity and appropriateness is questioned. It is argued that profitability is not the goal, at least not the only goal, of the public enterprises; and more important are the 'benefits accruing to society as a whole'; such as the development of backward regions, promotion of employment, employee welfare and the welfare available in general. If the cost-structure is adversely affected because of these

wider social objectives then the benefits must be taken in their entirety. "When it comes to the efficiency of the public sector it has to be judged in terms of the role it plays in its collectivity, the strategy of development a country has adopted, the true character of development it seeks to foster."[2]

We have already mentioned the difficulties in identifying such non-commercial goals at the enterprise level (or at the industry group level) and of measuring non-commercial benefits and their costs. Even if their existence and importance is granted and recognized, it is difficult to find these reflected in 'income and expenditure' statements. These are important but do not provide sufficient grounds for discarding the usual ratios or indicators for judging efficiency.

Those who argue against these indicators admit that public enterprises should add to society's surplus, and that they should be able to "cover their costs of production and internally generate their cash flows including recovery of investment".[3] It is precisely for assessing the ability of the enterprises in these matters, that the financial ratios are constructed and used.

Moreover, despite repeated adherence to "social, non-commercial goals and objectives", the government has not discarded the need of commercial viability. There are various circulars, speeches by ministers and planners

persistently urging and emphasizing the need for such a commercial and professional orientation. More recently, the BPE itself has adopted the practice of publishing these ratios as relevant indicators to assess performance.

But there is one serious problem in deriving and using these indicators from the present state of financial data which should be pointed out. Many public enterprises (even though monopolistic in terms of their shares) operate under conditions of administered prices. In addition, there are certain departmental exchanges and transfers at lower administered and negotiated prices which amount to indirect subsidization. Thus, unless one has a measure of the extent of such subsidy, both in the inputs purchased and, outputs sold, by the given enterprise and its impact on surplus revenue or losses, the profit and loss account statements cannot be very reliable. Dholakia (1983) has argued that potential profits i.e. after adjusting for indirect subsidy elements, may be much different from realized profits.[4]

In spite of these limitations and difficulties, one should appreciate the utility and validity of using financial ratios to appraise the commercial aspects of the functioning of enterprises even within certain non-commercial constraints and obligations. There could be different financial ratios and indicators, relevant for different aspects of business conduct and behaviour. In

what follows we present certain financial ratios pertaining to public enterprises that reflect their profitability, liquidity and financial leverage. As these are essentially commercial parameters, we also propose to compare them with the private enterprises.

Various objections and doubts are often raised against such a comparison and in defence of public enterprises,[5] namely, (i) the nature of industry e.g. public enterprises often have low-yielding and slow-yielding ventures of investment with them, (ii) in terms of social obligations e.g. location, employment and prices, public enterprises have to bear a greater burden, (iii) the size of a private undertaking is comparatively smaller and hence it has less complicated problems of management, and (iv) the nature of public accountability is such that it makes its management "procedure oriented" rather than "result oriented".[6]

All these factors together result in lower profitability and performance in public enterprises as compared to their private counterparts. We have already mentioned and commented upon the problem of social obligations. As far as the "slow-yielding and low-yielding investment" argument is concerned, it is difficult to establish why they should be slow-yielding in all cases. Many committees and reports have established that the long gestation periods and cost escalations in capital expenditure are results of

inefficient project implementation. The "slow yielding return" due to this type of failure is an administrative and managerial problem, and not really related to the "intrinsic nature of project". If it is slow-yielding due to time taken to establish a new product in the market, then the argument is perhaps partly valid. But again, if it persists for a long period of time, it must point towards inefficient marketing or incorrect demand-appraisal on which the investment plan is based.

The argument about "intrinsically low yielding investment" is also not very satisfactory because in the pricing of output, the rate of return can be set at an adequate and appropriately high level. The real difficulty in administered prices is not the 'rate of return' assured over average total cost, but the flexibility with which they respond to changing and generally rising prices of inputs and fluctuating market demand. The government has, at least in principle, always emphasized the necessity of charging and allowing an adequate 'rate of return' while determining prices.

The problem of growing managerial complexities with growing size is also an important aspect. But again there are a few enterprises in private sector which are similar in size so that the difficulty is not specific to the public sector.[7]

To summarize, despite some of the limitations of

financial indicators (and comparison of public sector and private sector in financial terms) discussed above, these indicators are useful and appropriate to assess and compare the commercial viability and efficiency.

Our attempt to compare public and private enterprises in similar industry-groups has been constrained by the availability of comparable data in both sectors. Ratios that have been used for the purpose of assessing and comparing performance are (1) Gross Profits to Sales, (2) Gross Profits to Total Net Assets, (3) Profit after taxes to Net Worth, (4) Current Assets to Current Liabilities, and (5) Debt as a percentage of equity.

Data on these ratios are taken from various surveys and studies conducted by the RBI. All of them follow the same set of definitions. Public enterprises are divided into Central Government Enterprises and State Government Enterprises. To compare these with the private sector, we have taken "Large Public Limited Companies" with paid up capital of Rs. 1 crore or more.

All enterprises are from the manufacturing and processing sector. Within manufacturing, engineering and chemical industry groups are shown separately. Data on the private sector i.e. Large Public Limited Companies are available at a greater disaggregate level of classification. But in the data on public enterprises only engineering and chemical industries are distinguished. Thus, we had to

restrict our selves to total manufacturing sector and within this sector, to the two broad industry-groups mentioned (engineering and chemical).

Data on financial ratios of six years (1973-74 to 1978-79) for central and state government enterprises and large public limited companies are based on different samples but there is considerable overlapping, particularly in 1975-76, 1976-77, and 1977-78. Size and the composition of sample by industry groups are given in Table 4.1.

The comparison at industry group level might appear slightly problematic. The number of enterprises among Central Government and State Government enterprises at the industry group level are much smaller, compared to the corresponding number in the private sector. In the case of Central Government enterprises the number of sampled enterprises as a proportion to total enterprises' population is quite high. In the case of State Government-owned enterprises, estimates of the total number of enterprises in each group are not available and one cannot know or guess the size of the sampling fraction. We, therefore, assume that what are observed in the sample are the ratios (and not absolute quantities such as sales, gross profits, etc.) and variations in the ratios are likely to be low. Moreover, number of enterprises in the sample have also somewhat increased over the years.

Table 4.1 : Sample of Government (Central and State) Enterprises and Large Private Enterprises : Size, Total and by Industry Groups

	Enterprises	Central Government	State Government	Large Private	
1973-74	Total	57	41	375	
	Engineering	30	8	111	
	Chemical	13	6	59	
1974-75	Total	57	42	385	With paid-up capital of Rs.1 crore and above
	Engineering	30	8	114	
	Chemical	13	6	61	
1975-76	Total	54	48	404	With paid-up capital of Rs. 1 crore and above
	Engineering	28	10	119	
	Chemical	13	7	73	
1976-77	Total	56	58	415	With paid-up capital of Rs. 1 crore and above
	Engineering	28	14	112	
	Chemical	13	8	80	
1977-78	Total	62	59	421	With paid-up capital of Rs. 1 crore and above
	Engineering	31	13	127	
	Chemical	13	10	82	
1978-79	Total	62	63	421	
	Engineering	34	16	127	
	Chemical	13	9	82	

Source: Large Private Ltd. Co. : July 1978 RBI Bull. 1975-76.
June 1979 RBI Bull. 1975-76, 1976-77, 1977-78.
July 1980 RBI Bull. 1978-79.

Government Companies : Feb. 1978 RBI Bull. 1975-76.
Aug. 1979 RBI Bull. 1976-77.
Nov. 1980 RBI Bull. 1977-78.
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Gross Profit to Sales Ratio: This ratio reveals the ability of the firm to earn a certain margin per unit of sales. It also indicates indirectly the costs of goods sold per unit. A lower value of this ratio may reflect the higher cost of goods sold due to unfavourable terms in purchases or inefficient utilization of raw materials and plant and machinery, which raises the cost of production. It might be low due to a fall in prices or the stickiness in selling price due to its 'administered' nature with the cost of goods sold remaining the same.

Data on this ratio for six years (1973-74 to 1978-79) reveals that its value is generally lower in the public sector as compared to the private sector except that in the engineering industry group, where it is higher in 1973-74 to 1976-77. But in 1977-78 and 1978-79, there is a decline and the ratio in the public sector is lower than the private sector. This shows the liability of public sector enterprises to generate adequate profits per unit of sales. As pointed out above, there may be many factors responsible for the low value of this ratio. One major explanation that has been advanced in this respect is the inability to adjust to changing input-prices as well as to demand conditions. But there is clearly no easy way of assessing the impact of these factors separately.

Gross Profits to Total Net Assets : This ratio focuses upon the ability of the enterprise to earn a "rate of return" on the total funds employed (irrespective of

debt or equity). Gross profit in surveys from which the data has been taken is in fact the operating surplus net of depreciation, but prior to payment of interest and taxes. In order to judge the ability to recoup total funds invested, therefore, this is an important ratio.

We once again observe here that the value of the ratio is lower in public sector enterprises than in the private sector. At the total manufacturing sector level, the lowest values for Central Government enterprises and State Government enterprises were 3.3 and 1.3 per cent respectively. In 1978-79, State Government enterprises have negative gross profit i.e. losses even prior to interest and taxes. The highest ratios for Central Government enterprises and State Government enterprises were 5.6 and 2.8 per cent respectively. In the private sector, the lowest ratio was 11.5 per cent and the highest was 13.6 per cent. A similar situation exists in both the engineering and chemical industry groups. However, in the engineering group, the rate of return is much better compared to that of chemical industry. In the chemical industry, it is as low as 0.6 per cent (Central Government) in 1978-79 and 0.2 per cent (State Government) in 1977-78. In 1973-74 and 1975-76, the State Government enterprises incurred losses.

Thus clearly production management of public enterprises have been unsatisfactory. They have not been able

to recover investment rapidly. In this respect, private enterprises have done better. One of the possible reasons that is usually mentioned in this regard is the high over-run in asset-costs due to slow implementation of the public sector projects.

Ratio of Profits After Tax to Net Worth: The next ratio that we have examined is Profit After Tax to Net Worth. This is similar or akin to post-tax earnings per share. In this case too, the ratio is higher in the private sector than in the public sector. State Government enterprises have negative profits after taxation or post-tax losses in all industry groups for almost all the years, except 1974-75 in the engineering industry.

Ratio of Current Assets to Current Liabilities: The ratio of current assets to current liabilities however shows no significant difference between the public and the private sector in most cases. At the total manufacturing sector level, there is a secular decline in the private sector's ratio, while public sector ratio has fluctuated. In the chemical industry, the ratio of Central Government enterprises is higher than that of the private sector, excepting in the year 1973-74. But ratios for State Government enterprises have been less than one in the chemical industry group. This implies a poor liquidity position and an inability to meet current (short term) obligations. Similarly, at the total manufacturing level,

the current ratio of the State Government has been declining and it reached 1.05 per cent in 1978-79. Therefore, we can reasonably infer that the ability to pay current obligations is precariously low in many State Government undertakings.

Debt-Equity Ratio: Finally, we have provided data on debt as a percentage of equity, in order to compare capital-structure of public and private enterprises. It is often reported that the public sector has to adhere to a 1:1 debt-equity ratio. It is true that the proportion of debt is more in public enterprises than in private enterprises. This however implies a greater committed interest burden and may affect the amount of profits after interest. In the engineering industry group, the proportion of debt is much more in Central/State Government enterprises than in the private sector. Similarly, a high proportion can be observed in State Government enterprises in the chemical industry group.

Thus, in spite of the limitations of the data it is evident that the financial performance of the public sector is not satisfactory and it is lower than that of the private sector. It is possible that an enterprise is technically and physically efficient and financially unsatisfactory because of pricing, leverage, etc. But the impact of such factors cannot be gauged separately. In some cases it may be possible to construct an index of physical productivity

Table 4.2 : Selected Financial Indicators for Public sector and Private Sector Enterprises: Total Manufacturing

	1973-74		1974-75		1975-76		1976-77		1977-78		1978-79	
	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.
Gross Profits/Sales												
Central Government	9.0	12.7	8.2	12.7	7.2	10.4	8.5	10.1	5.0	9.7	5.4	10.5
State Government	4.4		5.6		3.5		4.2		2.3		*	
Gross Profits/Total Net Assets												
Central Government	4.2	13.0	4.9	13.6	4.4	11.5	5.6	11.6	3.5	11.3	3.7	12.1
State Government	2.7		3.6		2.3	11.3	2.8		1.3		*	
Profit After Tax/Net Worth												
Central Government	2.0	13.6	6.2	14.2	3.3	10.2	5.1	10.3	*	9.7	1.9	12.0
State Government	*		*		*	9.9	*	1.8	*	9.8	*	
Current Assets/Current Liabilities												
Central Government	1.33	1.39	1.30	1.36	1.29	1.32	1.29	1.30	1.19	1.28	1.34	1.26
State Government	1.31		1.24		1.26		1.31		1.10		1.05	
Debt/Equity x 100												
Central Government	80.5	42.7	70.6	38.8	65.7	45.3	65.3	46.6	65.4	48.2	68.3	46.6
State Government	114.6		118.5		103.2		99.4		119.7		253.1	

* Numerator Negative.

Table 4.3 : Selected Financial Indicators for Public Sector and Private Sector Enterprises: Engineering

	1973-74		1974-75		1975-76		1976-77		1977-78		1978-79	
	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.
Gross Profits/Sales												
Central Government	15.6	12.5	18.1	12.0	17.7	10.5	16.3	10.9	7.6	11.0	7.6	11.0
State Government	6.9		11.8		11.3	10.2	10.6	11.1	8.0	10.9	8.1	
Gross Profits/Total Net Assets												
Central Government	4.9	13.7	6.6	13.3	7.5	11.9	7.4	12.7	3.4	12.7	3.5	13.2
State Government	4.4		8.3		8.8	11.3	7.8	13.0	5.9	12.6	5.4	
Profit After Tax/Net Worth												
Central Government	9.2	13.7	13.4	13.2	8.0	10.4	9.3	12.6	*	12.4	*	14.6
State Government	*		19.4		*	8.8	*	12.6	*	11.6	*	
Current Assets/Current Liabilities												
Central Government	1.44	1.37	1.42	1.31	1.43	1.28	1.40	1.28	1.31	1.30	1.27	1.32
State Government	1.31		1.33		1.37		1.33		1.31		1.44	
Debt/Equity x 100												
Central Government	171.8	38.5	153.5	37.8	131.1	39.3	119.9	41.6	150.8	44.2	179.4	44.9
State Government	252.2		161.2		135.0		138.3		182.6		179.9	

* Numerator Negative.

Table 4.4 : Selected Financial Indicators for Public Sector and Private Sector Enterprises: Chemicals

	1973-74		1974-75		1975-76		1976-77		1977-78		1978-79	
	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.	Pub.	Pvt.
Gross Profits/Sales												
Central Government	7.5	16.6	1.9	17.6	3.5	15.7	3.7	14.7	3.2	14.1	2.4	14.4
State Government	*		2.3		*	15.2	4.1	13.8	0.5	14.2	3.1	
Gross Profits/Total Net Assets												
Central Government	2.0	15.7	3.1	18.6	1.0	18.2	1.0	17.4	0.9	17.1	0.6	17.5
State Government	*		0.9		*	16.9	2.3	16.4	0.2	17.1	1.7	
Profit After Tax/Net Worth												
Central Government	*	16.0	2.7	20.0	*	16.0	*	14.8	*	14.8	*	16.2
State Government	*		*		*	14.9	*	13.8	*	15.0		
Current Assets/Current Liabilities												
Central Government	1.53	1.59	1.86	1.68	2.2	1.60	2.82	1.61	2.75	1.59	1.97	1.51
State Government	0.98		0.82		0.81		1.26		0.86		0.84	
Debt/Equity x 100												
Central Government	76.9	41.2	60.6	32.8	64.3	40.1	80.7	38.1	85.1	35.9	95.7	30.8
State Government	378.2		500.0		897.2		175.1					

* Numerator Negative.

or efficiency without any financial data. Yet financial viability is clearly a necessary condition for existence of an enterprise in the public sector as well as in the private sector.

4.3 Total Factor Productivity as an Indicator of Performance

Recently the 'factor-productivity-measure' has been suggested as a powerful and superior method of appraising the performance of public sector enterprises. It is in fact suggested as a superior alternative to the profitability criterion. Its alleged superiority lies in its being dynamic as against the profitability criterion being static in nature.[8] This method essentially is as follows. Initially, time series of real capital stock, real output (net) and labour inputs are constructed, and from the (series), an index of each of them is prepared. Using the shares of capital and labour in value added as weights, the index of capital and labour are combined to form a single 'total factor input index'. The ratio of the total output index to total factor input index is then taken. An index of these ratios is called the total factor productivity index.

Dholakia (1978) has used this indicator to assess the public sector's performance and compare it with private sector performance.[9] As this is the only study of the public sector of its kind and is often referred to in later literature, we present a brief summary of, and comment on, it.

Dholakia's study covers the period 1960-1975. The economy is divided into the commodity producing and the tertiary sector. Each sector has public and private enterprises. Within the public sector, activities are distinguished by type of organization, namely, departmental and non-departmental. For each of these sectors and categories, Dholakia estimates capital stock and labour inputs.

The estimates of capital stock, for manufacturing enterprises in the private and public sector are prepared, using annual reports of government enterprises, RBI studies and his own research on capital/output ratios in the registered manufacturing. For the non-manufacturing sector, he first derives capital-output ratios in the public sector to derive benchmark year capital stock estimates. The public sector non-manufacturing sector ratio was derived using $V_1 = V/[K + (1+K) W_1]$ where V_1 and V indicate capital-output ratios, for the public segment of the sector and sector as a whole respectively, W_1 represents share of public-owned segment in the sector's product, and K stands for ratio of private and public capital output ratios, or what he refers to as 'relative differential between their capital-output ratios'.[10]

Obviously, estimation through this formula depends heavily on estimated values of V and K. He has used his own estimates of V, from his unpublished paper, not presented in the book. For the estimates of K, the ratio

of registered private manufacturing capital-output ratio to public manufacturing capital-output ratio (excluding steel) has been used for all the remaining non-manufacturing sector. This is unsatisfactory because many of these sectors such as construction, other services, transport other than railways, have a significant amount of unorganized activity which has much lower and diverse capital-output ratios. Therefore, their relative differentials are likely to vary, drastically and differently from that of registered manufacturing activity.

Given the data on capital stock bench-mark year estimates (1960-61), a time series of capital stock is prepared for each sector and segment by adding net domestic capital formation at 1960-61 prices to the capital stock of initial bench-mark year. From these, index of capital-inputs is prepared, which is used to compute 'capital productivity' and 'total factor productivity'.

The findings of this exercise are markedly different from the general impression of inefficiency associated with public enterprises. His results of factor-productivity analysis show that factor productivity has been consistenly higher in the public sector than in the private sector, and there is a steady widening of the gap between the two.[11] We show in Table 4.5 index of factor productivity in private (manufacturing) and public (manufacturing) to illustrate this.

Table 4.5 : Indexes of Net Output, Factor Inputs and Total Factor Productivity in the Manufacturing Sector (Public and Private Enterprises)

Year	Public			Private		
	Index of Net Output	Indix Total Factor Input	Index of Total Factor Productivity	Index of Net Output	Index Total Factor Input	Index of Total Factor Productivity
1960-61	100.00	100.00	100.00	100.00	100.00	100.00
1961-62	119.51	114.71	104.18	109.20	105.95	103.07
1962-63	152.44	134.64	113.22	117.90	115.73	101.88
1963-64	198.78	155.95	127.46	127.30	124.77	102.03
1964-65	235.37	174.16	135.15	136.80	130.20	105.70
1965-66	250.00	192.23	129.98	139.53	131.27	106.29
1966-67	239.02	208.25	114.78	133.87	138.24	96.84
1967-68	264.63	223.99	118.14	129.32	140.07	92.33
1968-69	301.22	235.99	127.64	134.78	142.28	94.73
1969-70	360.98	246.36	146.53	154.80	148.65	104.14
1970-71	402.44	255.95	157.23	158.04	153.95	102.66
1971-72	408.54	276.86	147.56	161.17	157.94	102.05
1972-73	475.61	300.56	158.24	162.79	161.97	100.51
1973-74	528.05	323.11	163.43	178.16	166.51	107.00
1974-75	600.00	331.17	181.18	173.51	168.93	102.71
1975-76	675.71	357.87	188.79	174.42	169.78	102.73

Source: Dholakia, Bakul H. The Changing Efficiency of Public Enterprises in India. Somaiya Publications Pvt. Ltd., Bombay, 1980, pp. 151-152.

It is difficult to explain these results by themselves. When we compare them with various other types of information and evaluation by the COPU or other studies we do not find any supporting or explanatory evidence or argument. As noted earlier (in Chapter II, Section 2.2.1), we do not have adequate data for public sector at a greater level of disaggregation. However, if we compare the factor-productivity index in those sectors where the public sector is supposed to be dominant, such as basic goods, iron-steel, as reported in the CSO study, we actually find consistent decline in factor productivity.[12] In the case of the capital goods industry, there are more fluctuations, and a marked decline in the period 1965-70. A study of factor productivity as reported by Ahluwalia (1985) also gives a similar picture.[13] It seems that Dholakia's procedure of deriving and constructing the relevant data is of doubtful validity.

In a later paper Dholakia argues that his indicator may be used for the evaluation of public enterprises.[14] The discussion on this indicator is preceded by a discussion of inadequacies of the profitability criterion and creates an impression of the former being superior to, or free from the defects of profitability criterion. But it should be noted that if subsidy elements both in input and output render the 'amount of profit' misleading, then it is equally true of 'net or gross value added' or 'output' used in factor productivity analysis.

There are other serious objections to this method. Evidently this 'measure' is derived by assuming a strict Cobb-Douglas type of production function for the economy. Why should one assume that 'enterprises', or sectors' or the economy's behaviour can be appropriately described by a strictly Cobb-Douglas or related form of production function? The analytical as well as empirical relevance and meaningfulness of this type of production function has been shown to be doubtful and questionable.[15]

Secondly, this approach requires an estimation of capital-stock series. This has many difficult theoretical and empirical problems, both in definition as well as in their measurement. However well-established, detailed and regular the data base may be, there is no single procedure that can take care of problems such as age-composition, treatment of depreciation, relative prices and their changes over time, degree of utilization, etc. This renders any estimate of capital stock a doubtful, if not entirely meaningless, quantity.

Thirdly, at a high level of aggregation the 'production function' has a very limited meaning and significance. Although some authors have argued that aggregation does not violate the essential elements of analytical argument, with greater aggregation and heterogeneity of product-mix, estimates of production function become less credible. Hence it becomes difficult to find meaningful interpretation of factor-productivity.

4.4 Capacity Utilization: Problems and Evidence

Among non-financial indicators of performance capacity utilization is an important indicator. Capacity indicates in a physical or an engineering sense, the optimum level of output attainable with given capital and uninterrupted and unconstrained flow of current inputs, including labour. Measures of capacity would vary from industry to industry, or between a continuous or a discontinuous process of production. The engineering notion of capacity obviously ignores the aspect of cost. In economic theory capacity is defined to mean 'the rate of output at which there is no incentive to alter the size of plant or the rate of output at which short run and long run average costs are equal'.[16]

In practice, estimates based on project reports or project assessment (which are akin to engineering notions of capacity), terms such as 'rated capacity', 'installed capacity' are used. Other measures based on other concepts are also used. For instance, Wharton Index takes peak outputs as capacity. There are shift-based measures which focus on capital-utilization. Each has its own advantages and limitations.

Low level of capacity utilization has been one of the major criticisms against public enterprises. The COPU (5th Lok Sabha), in its 40th report had observed that "concern is however voiced about the actual production

turnout as compared to the installed capacity" and, "under-utilization of production capacity leads not only to locking up of scarce resources, but also to widespread repercussions in linked industries and heavy avoidable imports".[17] In addition "under-utilization means that the plant and machinery may become obsolescent and even unprofitable because of technological development before full value of investment made has been fully derived".[18]

The COPU recommended that Bureau of Public Enterprises (BPE) should devote a special chapter on capacity utilization in its annual reports and, "it should bring out in clear percentage terms the utilization of installed capacity, reasons for idle capacity, if any, and its implication in financial terms; and remedial measures taken to improve capacity utilization".[19] Thus, since 1972-73, BPE reports include a separate chapter wholly devoted to capacity utilization.

We have already noted that definition of capacity is a very complicated problem and almost every measure of it would have some deficiency. In some cases e.g. mining or production of special purpose machines as per requirements, it is difficult to assess capacity. Partly due to such problems and partly due to lack of sufficient investigation, available data also have certain limitations. Data published by the BPE are derived from different sources and different concepts or notions are used even within an

industry. In some cases figures are derived from initial 'detailed project reports', which relate to data prior to executions. Sometimes the enterprise management itself prepares its own estimate. When neither of these is available, targeted or budgeted production given by the ministry is taken as capacity.

In 1979, the COPU (6th Lok Sabha, 28th report) specifically inquired into the problem of low capacity utilization.[20] It inquired into 100 undertakings out of a total of 112. It stated that in the case of 33 undertakings, it was not possible to determine under-utilization of capacity either because it is not known or because it is not fixed due to the nature of operations. It also criticised the information provided by the BPE and enterprises on various grounds: "Some of them (i.e. enterprises) have given installed capacity of actual production in different 'terms' which is misleading."[21] It notes with surprise that the BPE takes budgeted or targeted production instead of installed capacity and "what is more intriguing is that even companies in the same sector have made contradictory statements. For instance out of four companies in Coal sector one (Bharat Coking Coal) has stated that information regarding licensed and installed capacity is not available, one other (Western Coal Fields) has stated that it is not applicable, whereas the other two companies state that <u>in lieu of installed</u> capacity, annual targets are taken."[22]

The COPU further remarks that "due to non-availability of required information any scientific evaluation becomes impossible."[23]

Thus care should be taken in the use and interpretation of the information provided by the BPE. There is still another aspect which must be mentioned. A perusal of the balance sheets of various major enterprises, reveals increases in the gross block from year to year, which are actually additional fixed asset investments (recorded at the procurement-cost). Assuming that part of it is used for repairs and replenishment, the remaining should result in additional capacity, or at least more balanced capacity, or more capital capacity. But these changes are not strictly taken into consideration, and capacity estimates are not revised in accordance with these changes. Thus while using the BPE data these limitations or deficiencies should be considered. Yet at present this is the only source of data and information and we have used the same in our analysis.

The BPE reports also provide enterprisewise data on utilization; it is beyond our present scope to analyse detailed data in elaborate terms.

We have restricted ourselves to the three industry-groups (steel, fertilizer and petroleum) because it is easier to combine and aggregate their data, therefore their

industry-group level figures are readily available. For engineering and consumer good industry groups product heterogeneity is significantly high and we will have to derive certain weights such as share of each enterprise or plant or division in total value of output or value added, to combine them. Still it should be mentioned that in some enterprises (e.g. HMT) capacity utilization was between 60-70 per cent and in some other it was as low as 17 per cent. For example for HEC Ltd., which is the major enterprise in engineering group we quote the following figures from BPE. (See Table 4.6). It would serve to illustrate, how changing product-mix and different utilization rates for each product pose difficulties in arriving at an aggregate index for an enterprise.

Table 4.6 : Capacity Utilization in Heavy Engineering Corporation (Ltd.)

	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
Mach. Equipment	46	42	37	19	28	20
Structurals	17	22	10	-	-	10
Mach. Tools	22	24	25	6	9	7
Casting and Forgings	24	29	10	12	25	19

Obviously to arrive at an aggregate capacity utilization of Heavy Engineering Corporation (Ltd.), we will have to assign some 'weight' to each of its produce i.e.

Mach. Equipment, Structurals, etc. There is no relevant data or information to determine this. Moreover, even if available for a given year product-wise weights will not be constant over time. Over the years the firm will change its product-mix so as to adjust to the market conditions.

Similar situation is observed in some of the consumer-goods enterprises. It is likely that besides organizational and technical failures, shrinkage and stagnation of demand must have been an important reason. No study has taken up analysis of problems using enterprise-data. However, it would be possible and rewarding.

In Table 4.7 the enterprises which reported their level of capacity utilization are classified under three categories: below 50 per cent, between 50-75 per cent and above 75 per cent. Data relate to the years 1972-73 to 1981-82. As the number of enterprises and reporting enterprises differ from year to year, we cannot talk of trends in the strict sense of the term, unless adjusted for varying responses. Yet the figures in this Table do indicate some possible ups and downs in these three categories. The proportion of enterprises showing 'more than 75 per cent utilization', has increased upto 1976-77 (65 per cent) but then declined to 46 per cent in 1980-81.

Table 4.8 provides data on capacity utilization for six years 1977-78 to 1982-83 for three industry groups:

Table 4.7 : Levels of Capacity Utilization in Public Enterprises

	Total No. of Enter-prises	Total Repor-ting	Under 50%	Between 50-75%	Above 75%
1972-73	101	82	25 (30.48)	16 (19.51)	41 (50.00)
1973-74	114	84	16 (19.04)	23 (27.38)	45 (53.57)
1974-75	120	97	16 (16.49)	27 (27.84)	54 (55.67)
1975-76	125	112	15 (13.39)	28 (25.00)	69 (61.61)
1976-77	149	117	17 (14.53)	24 (20.51)	76 (64.95)
1977-78	155	129	27 (20.93)	31 (24.03)	71 (55.39)
1978-79	159	131	27 (20.61)	42 (32.06)	62 (47.33)
1979-80	169	133	28 (21.05)	43 (32.33)	62 (46.62)
1980-81	168	150	42 (28.00)	39 (26.00)	69 (46.00)
1981-82	181	148	25 (16.89)	43 (29.05)	80 (54.05)

Note : Figures in brackets are percentages.

Source : BPE Annual Reports.

Table 4.8 : Capacity Utilization (Per cent) for Selected Industry Groups

Year/Industry	Steel	Fertilizer		Petroleum
		Phosp.	Nitro.	
1977-78	77.38	63.20	54.11	90.72
1978-79	67.02	55.37	54.96	84.97
1979-80	67.02	39.90	44.20	85.09
1980-81	64.21	45.11	38.72	80.63
1981-82	69.47	45.13	57.37	31.58
1982-83	71.57	43.76	53.11	87.72

Source : BPE Annual Reports.

steel, fertilizer and petroleum. In the case of steel, the capacity utilization has been generally higher than 65 per cent, the lowest being 64.21 per cent in 1980-81. In petroleum group it has been generally higher than 80 per cent, the lowest being 80.63 per cent in 1980-81. These two industry groups actually show much better performance when compared with the fertilizer group of industries. In the case of phosphatic fertilizers, the capacity utilization was as low as 40 per cent in 1979-80 and for nitrogenous fertilizers, it was even lower (38.72 per cent) in 1980-81.

Reasons for low capacity utilization are various and these seem to have become perpetual over a period of time. A perusal of the annual reports of the BPE reveals a number

of inadequacies or functional deficiencies.[24] Some of the reasons that are often mentioned are as follows:

1) Design defects and inadequacies in equipment
2) Power shortages and failures
3) Shortages and poor quality of raw materials
4) High maintenance-down-time
5) Disturbed labour conditions
6) Low labour productivity
7) Inadequate demand in some cases
8) Time required for attaining necessary operative and technical skill, setting up of the design, and other production-support-services for sophisticated equipment and processes in complex engineering plants.

A number of steps have been taken to improve the situation, which include (1) diversification of product-mix, (2) better maintenance of equipment, (3) improvement in managerial and operational efficiency, (4) increasing labour productivity and (5) better training for development of operating skills.[25]

Since the government in its various replies, as also the BPE in its reports have been making claims that they have taken appropriate 'steps' such as product diversification and improved maintenance and management to remedy the situation, it would be worthwhile to look into the efficacy of these measures. The only agency which can undertake this type of inquiry is the COPU. Thus, it would be useful

to summarize the findings of the different COPUs whenever they have sought to inquire into the problem of efficacy of measures or steps taken.

The COPU which is the only agency which can undertake such an investigation, in its 40th report (Role and Achievement of Public Undertakings, 1973), noted that "even where attempts had been made by individual undertakings for diversification of production, such attempts had been rather sporadic and diffused, and no serious efforts seem to have been made for comprehensive plans of diversification consistent with market trends of the product".[26]

In a similar note, the COPU (6th Lok Sabha) remarks that "the claim of the government and of the BPE in particular, to have studied the problem in depth, and taken remedial steps is not at all borne out by any tangible results. The consequence of the utter neglect of the crucial area seems to be nobody's responsibility."[27] It also recommends that no further expansion of a production line where the existing facility in any undertaking remains underutilized, should be permitted.

The report also refers to a case where the 'supposed' solution of diversification has aggravated the problem. "In the case of the Heavy Engineering Corporation, it is interesting to note that the production in its Heavy Machine Building Plant is stated to be diversified for manufacturing mining equipment, whereas there is already high under-

utilization of capacity for such equipment in the Mining Allied Machinery Corporation."[28]

A real problem arises when the present management is asked to attain a certain capacity utilization from existing capital capacity for which it had not been responsible. Thus, if initial investment 'fails' to appraise and plan for apprpriate demand, ["due to stagnation or shrinkage",] the existing management can do little to alter the situation immediately.

Thus, even though the level of capacity utilization appears to be an attractive indicator of performance, like the financial indicators, it too has problems or limitations that are both conceptual and empirical. Given the unsatisfactory data base and related problems such as product-mix, aggregation, etc., our findings concerning the extent of capacity utilization cannot be very precise. To sum up there are substantial differences, in capacity utilization, between different industry groups and even within an industry group. The criticism made in the COPU reports is not wrong but the solutions are not easy, particularly when the initial investment proposal has been faulty, or if demand is stagnating or shrinking. Therefore, further investigations should focus on marketing and the demand side, distinguishing it from organizational and technical failures.

As far as possible, the BPE should provide reasons

for underutilization and shortfalls in production, by distinguishing them in terms of those due to technical failures e.g. maintenance, power shortages, and labour disputes, etc. This type of information is sometimes published only in the case of coal-group enterprises by the BPE. Its extension to other groups would help to get a better insight into the working of enterprises and problems of those industry groups.

4.5 Technological Development: Contribution of the Public Sector

The role played by the public sector in technological development and progress is an important aspect of its functioning. Firstly, self-reliance and technological development are part of its main objectives. Secondly, it operates predominantly in capital and intermediate goods sectors. The technological development of these sectors set the pace of development in other sectors.

The process of technological development has certain phases and/or aspects which may be summarized as follows:

(1) Choice and cost of acquisition or development of a given technology.

(2) Absorption, assimilation and adoption.

(3) Innovation and further updating through research and development.

There are some studies which focus on some of these elements with special reference to public sector enterprises. Most public enterprises were established in those areas where

past accumulated know-how was more or less absent. As a result, there was no alternative but to import the required technology through foreign collaboration or consultancy. Consequently, many leading public enterprises have collaboration with foreign corporations or consultancy services.

There are several government documents, notifications, circulars, etc., which specify general guidelines and restrictions concerning foreign collaborations, such as admissible proportion or size of foreign investment in total capital (loan), fixation of royalties, consultation fees, conditions for establishment of ancillary units producing equipments and parts; provisions for gradual phasing out of import content and reduction in dependence through assimilation, etc.

Many of these are available in the SCOPE's (Standing Committee on Public Enterprises) volume on "Management of Public Enterprises". Moreover the COPU (5th Lok Sabha) has also published special report devoted to these problems in its 89th report.[29] Apart from useful compilations of various government circulars, statements about the guiding principles, suggestions, orders, etc., it also contains a brief but useful summary of management of the problems involved. However the scope of its inquiry being wide and general, the committee has not conducted a detailed inquiry by industry groups, though some cases have been looked into

from time to time if specific complaints or questionable procedures or deals were reported. It would be useful to quote, some of the observations made in the report. According to the report:

"The experiences of foreign collaboration were however not uniform. The terms of collaboration in certain cases were such that foreign collaborations assumed too many functions. In some cases the collaborations undertook the supply of equipment which sometimes led to inflated pricing and over-import of equipment. The technology supplied was at times outdated. Restrictive clauses were introduced in collaboration agreements. This hampered the dissemination of technology and introduction of local changes in the process; and restricted exports. There have also been cases of the same or similar technology in the country leading to introduction of variety of standards of different countries in raw materials, spare-parts, design specification, etc."[30]

The RBI has also conducted surveys of foreign collaboration in Indian industry in 1968 and 1974, which cover almost the whole decade of the sixties. Data from these reports provides information on the type of collaboration, restrictive clauses in collaborations (e.g. export restriction), number of foreign technicians employed, and payments according to type of collaboration (e.g. technical collaboration, subsidiaries or minority participation).

While comparing the behaviour of government companies and private sector companies, the survey report observes that, "generally the collaborations (i.e. public enterprises collaboration) were wider in scope than those in the private sector. In agreements stipulated for government companies, apart from technical assistance, the collaborators also undertook contracts for the supply of equipment, plant-construction, and also supply of credits."[31]

Using these two sources of information, Pillai argues that the alleged superiority or progressiveness of the public sector when compared to the private sector, in negotiating and acquiring technology is not at all established.[32] On the contrary, it seems that foreign companies have wielded more power and bargaining strength while dealing with the public sector counterparts. This is not surprising when foreign companies have exclusive or monopolistic control over technology and when government was anxious to have the best available.

Of course this should not prevent assimilation, adoption or innovation. A few case studies do focus on these aspects.

Dhar (1984) in his case study of the Thal Vaishet and Hazira fertilizer projects argues that the choice of technology in these public sector enterprises was influenced by the World Bank's own favours.[33] This is possible, (in Dhar's view,) because of the foreign exchange and financial

resource constraints that we face. Moreover, he also says that by ruling out the possibility of Indian firms undertaking project-construction on the ground that they lack experience, the government has in fact perpetuated dependence.

Sushil Khanna (1984) in his study of technological transfer in Indian Petrochemical Industries observes that the public enterprises in this sector have mostly failed to absorb the technology and dependence has continued as before. He points out that those public enterprises which manufacture and supply the needed plant and equipment, also have a high import content i.e. 60 to 70 per cent.[34]

This failure in establishing design and engineering skills in India has also been highlighted by the National Committee on Science and Technology. According to its report: "Some public sector concerns have taken up collaboration agreements on items like sophisticated centrifugal compressors, without adequate preparatory work on manufacturing facilities or a full appreciation of the technical background of the applicant or the necessary expertise and desire to follow with the agreement."[35] As a result of this neglect the report observes that "on the whole the country does not seem to have any prospects of immediately paying much, by way of foreign exchange, nor do such agreements result in import-substitution. This is true of some private sector firms with collaborations on specialized lines of manufacturing, as of public sector firms."[36]

In the case of steel enterprises Ashok Desai (1976) explains the technical failure and resulting low capacity utilization, in terms of the failure to apply local or national test practice techniques. Similarly, in a later article (Desai, 1984) he reiterates that low utilization and low productivity are the result of failure in adaptive innovations rather than inherent technical disadvantages (e.g. quality and composition of our iron-ore).[37] Ramprasad Sengupta has argued that apart from low capacity utilization, technical and market constraints, public sector lacks dynamism required for technical innovation and growth of factor productivity. He also argues that unbalanced capacity in plant design has been the major technical problem in our steel plants. He argues that the steel industry has failed to adopt the design of coking-coal washeries suited to our conditions.[38] Similar criticisms have also been levelled at coal mining machinery. Often "the aid-givers have supplied equipment manufactured by them but not suitable to Indian conditions.

Both the Mining and Allied Machinery Corporation and the private sector, have been more interested in securing collaborations for indigenous manufacture of these machinery, than developing new design of machinery to suit Indian conditions."[39]

A case study of Swaraj Tractors, with reference to the tractor industry policy in general, by Bhat (1984)

points to the failure of institutions or departments which formulate and control technological (development) policy.[40] The study argues that the Swaraj Tractor model developed by the CMERI, itself a government body, was locally more suited and superior, and well established by all tests. Yet its commercial production was refused by a number of central government bodies and enterprises. That this was a mistake was later proved, when the Punjab government's PSSIDC established Punjab Tractors Limited and implemented the project proposal with record execution time, and reached full capacity utilization in four and a half years. This case in essence suggests the risk-averse nature of non-confidence displayed towards indigenous innovations by policy-making bodies. It also suggests excessive faith or obsession with foreign technology and expertise.

There are some studies referring to other countries, about behaviour of public enterprises in innovation and technological development. Most comprehensive among these is Harlow's study on innovation and productivity under nationalization.[41] This study examines (1) motivations behind innovations and designed technical change, (2) problem of productivity and scale of operations, with reference to five major nationalized industries of Britain, namely, Air-transport, Power-generation, Communication, Gas, and Mining.

The study argues that the important driving forces

behind innovations have been the desire to control escalation of costs on the one hand, and managing prices and demand on the other. The desire to control cost was due to the rise in the prices of one or the other important inputs or factors, and this resulted in change in scales and technical innovation. The study supports the view that improved factor-productivity is generally the result of increases in scale and technical change. This study is an example of detailed description of technical changes analysed in its organizational, technical and motivational aspects.

There seem to be very few economic studies focussing on the process of absorption, assimilation and adoption in the Indian situation. Existing studies referred or summarized above do at times suggest or hint at failure in absorption or adoption. Yet considering the diverse commodities, technologies and their continuous growth or evolution on the one hand, and reported efforts of ancillarization, technical-consultancies, and construction-projects carried out by public enterprises in some other underdeveloped countries on the other, we require more in-depth industry-studies to pass a judgement.

While technical literature is essential and available, its economic aspects, such as extent of import-substitution, development of industries producing equipments and special machines; links and cooperation between applied research

institutes and public sector or private sector enterprises, nature and size of their ancillaries, effort and quality of R & D, etc., have not been systematically or sufficiently documented and examined. Analysis of the engineering (heavy, medium and light) group of enterprises, their R & D and consultation abilities would be particularly useful.

The question may well be raised "Has the private sector been performing better than or differently from the public sector in the field of technological development?"

Available studies of private sector performance, as of the public sector and their limitations in scope, coverage, information base, etc., suggest that the problem has to be more adequately investigated to arrive at a meaningful answer. Consequently, any effort to draw a comparison and derive a judgement at this stage might be hasty and premature.

However, perhaps we can compare financial indicators such as the ratio of R & D expenditure to Sales or EBIT. But it is difficult to argue that the higher this ratio, the higher is the success or intensity of effort in the field. Moreover, due to tax-exemptions associated with R & D expenditure, there is a need to be more circumspect. Yet if at all it is of any value we give the ratio of R & D expenditure to Net Sales in selected industry groups (Table 4.9). However, we could not get comparable data for private sector.

Table 4.9 : R & D as a Proportion of Net Sales in Public Enterprises

	1978-79	1979-80	1980-81	1981-82	1982-83
Steel	0.1	0.1	0.3	N.A.	N.A.
Petroleum	0.7	0.4	0.6	0.3	0.3
Chemical Fertilizer Pharm.	0.5	0.7	0.5	0.3	0.3
Heavy Engineering	0.7	1.1	1.2	3.3	0.1
Medium and Light Engineering	2.1	2.5	2.5	3.0	2.8
Transport Equipment	0.9	0.8	0.7	0.3	0.4
Consumer Goods	0.3	0.5	0.1	0.1	0.1

Source : BPE Reports.

When a technology is imported or developed elsewhere, have public enterprises been able to build up the necessary supporting technology and trained their manpower for its full absorption? Are they capable of planning a gradual phasing out of our dependence? In spite of various negative indications, these questions do not have a final answer.

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1. The problem involved here is that of measuring social costs and benefits. It is difficult quantify these and often the methodology and measurements involve some arbitrary or subjective imputations and evaluations.

2. Kabra, Kamal Narayan. "Profitability: An Indicator of Efficiency?" State Enterprise, Vol. II, No. 3, June-September 1984, p. 235.

3. Ibid., p. 235.

4. Dholakia, Bakul. "Performance Evaluation of Public Enterprises: Some Issues Relating to Evaluation Criteria and Information Needs," in Shankar Mishra and Ravishankar (Eds.). Public Enterprises in India. Himalaya Publishing House, Bombay, 1983.

5. Laxmi Narayan. Principles and Practice of Public Enterprise Management. Sultan Chand and Company, New Delhi, 1982, p. 222.

6. In case of (i) and (ii) if public sector has to undertake the activity because private sector fails to it up, or even if private sector ventures to take it up, its performance is likely to be similar to that of public sector because of social non-commercial conditions and objectives, then comparison is clearly invalid or irrelevant. But to judge this, the relevant information is often not available. However in case (iii) and (iv) such difficulty need not arise.

7. If the enterprise grows and expands as its internal and external (market) conditions permit then the problem may not always appear unsurmountable and difficult. The real problem with public sector enterprises is that their size and organizational structure is often decided 'externally' and 'from above'. The experience of

sectoral corporations or holding companies such as SAIL, Coal India Ltd., indicates that such imposed 'large size' accentuates administrative complexities and fail to improve overall efficiency. On the contrary it kills the initiative of enterprise or plant-level management. See Tulpule, Bagaram. Amidst Heat and Noise. All India Management Association, New Delhi,1977.

8. Dholakia, Bakul, op.cit., pp. 42-43.

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17. Government of India, Committee on Public Undertakings (COPU), 5th Lok Sabha, 40th Report on Role and Achievements of Public Undertakings, 1973, Recommendation No.22, Para 4.15.

18. Ibid.

19 Ibid., Recommendation No. 23, Para 4.16.

20. COPU, 6th Lok Sabha, 28th Report on Delays in Commencement of Production/Business, Underutilization of Capacity and Related Matters.

21. Ibid., pp. 17-18.

22. Ibid., p. 18.

23. Ibid., p. 18.

24. Bureau of Public Enterprises. Annual Reports: 1973-74, pp. 315-322; 1980, pp. 215-231; 1981-82, pp. 213-225.

25. Ibid.

26. COPU, 5th Lok Sabha, 40th Report.

27. COPU, 6th Lok Sabha, 28th Report, p. 29.

28. Ibid., p. 29.

29. SCOPE and Government of India. Management of Public Enterprises, and COPU, 5th Lok Sabha, 89th Report on "Foreign Collaborations in Public Undertakings".

30. COPU, 5th Lok Sabha, 89th Report, p. xiii.

31. Reserve Bank of India. Survey on Foreign Collaborations, 1974, p. 130.

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CHAPTER V

SUMMARY AND GENERAL CONCLUSIONS

The public sector was developed and expanded since the Second Five Year Plan, in order to bring about rapid industrialization, the development of basic and heavy industries, and the control of the 'commanding heights' of the economy. The shares of public sector in gross domestic product and gross domestic capital formation have consequently increased. It accounts for more than one-fifth of the GDP and nearly one-half of the GDCF in the Indian economy. It has played a significant role in developing the modernized and organized segments of the economy. It accounts for 62 per cent of the total net domestic product originating in the organized sector and 63 per cent of total organized employment.

However, its share in investment and therefore the pace of its expansion, has not only been different between sectors, but also within the sector, between periods. The decline and imbalances in investments in certain sectors like railways and electricity have been important factors behind the industrial stagnation since the mid-sixties.

Public sector savings as a proportion of public sector investment have increased in the fourth period after

a decline in the second and third periods. But in certain crucial and important sectors like non-departmental manufacturing, electricity, and transport other than railways, there have been negative savings in most of the years. Consequently, internal resources generated as a proportion of total financing required for accumulation have not been satisfactory and have fallen short of original expectations.

Growth of labour productivity as judged by per employee value added at constant prices shows different trends in different industry groups. In transport equipment, chemical products, petroleum and oil production, labour productivity has increased. But in two other crucial industry groups (steel and heavy, medium and light engineering) labour productivity has declined.

The public sector was established in these areas where not only effort of a pioneering nature was required, but also where heavy capital employment was needed. Its role in developing such basic and heavy industries has been important and indispensable. In many industries of the manufacturing sector, as well as in electricity and transport, it could have achieved a better level of efficiency. However, for a variety of managerial, administrative and policy reasons (which include, political interference, erosion of managerial autonomy, procedure-oriented management, delays in implementation of projects, faulty pricing policies, etc.), it has failed to realize its potential in both real and financial terms. This is reflected in the

decline in the rates of growth of its product, inadequate internal resources for financing accumulation and rising incremental capital-output ratios.

Many studies have highlighted the major weakness of the public sector in respect of the absence of cost and efficiency norms which are *sine qua non* for determining a rational and viable pricing policy. In many enterprises, standard costs for main products have not been fixed or a standard costing system has not been introduced. Because of the absence of such norms, the customer and economy as a whole have often to pay for the cost of the ensuing inefficiency and mismanagement. On the other hand, this also often results in extremely sticky administered prices and the exclusion of legitimate provisions such as adequate depreciation.

Accordingly, there is a need to evolve cost-efficiency norms and well-defined pricing practices, especially in those sectors where administrative prices prevail, in which the need for such a criterion is very urgent. In the absence of such norms, it is difficult to evolve procedure which would ensure certain flexibility for enterprises in adjusting to changing input-prices and market conditions.

The performance of public enterprises as judged by financial ratios is not entirely satisfactory. A comparison of public sector enterprises and private sector enterprises indicates an inferior performance by public sector enter-

prises. Many of the financial ratios not only indicate the need for greater financial soundness, but improved financial management.

Available data on capacity utilization suffers from many deficiencies. Not surprisingly there are hardly any research studies on this aspect of the functioning of the public sector. Nevertheless information available (including inquiries made by COPU) point to the need for careful investment-planning in creating capacities, and investing more technical and managerial effort for the better use of present capacities.

Also, the role of the public sector in the development of technology and self-reliance needs further industry-wise research. Current studies focus upon many weaknesses and failures in making technological choice and adequate effort and failure in absorption of imported technology. Unfortunately in this area too, information is scarce. But even with research studies currently available, a meaningful comparison between the private sector and the public sector is still difficult. It is possible that both of them might be suffering from similar types of weaknesses and limitations. Other important and related problems such as the structure of ancillarization and the efforts that have been made so far for indigenization and absorption of course require some intensive study.

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