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GROWTH AND STRUCTURAL CHANGES
IN INDIAN INDUSTRY

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[Abstract: This paper deals with the growth and structural changes in Indian industries, particularly the manufacturing sector over a period of 1950 to 2010. For the purposes of analysis the period has been divided into four segments. These are: 1) immediate post-independence era; 2) era of controls and regulations; 3) slow move towards liberalizations; and 4) post-liberalization scenario. Issues relating to structural changes, productivity trends, and role of the public sector are also discussed with a view to trace the story Industrialization in a proper perspective. Industrial structure in India inherited the colonial legacy and continued in the same path with marginal changes till the end of the Second Five year Plan. Third Plan accorded emphasis on heavy industries with prominence to public sector. This policy failed to realise the targeted growth. The industrial policy was largely responsible for stagnation in Industrial growth. The licensing policy crippled the growth industries till the end of 1980s. Thereafter, India slowly moved towards liberalization. Post- liberalization phase was marked with dismantling of controls and import liberalization. The licensing system was done away with to a large extent. However, the industrial growth did not pick-up due to variety of reasons. The growth did accelerate after 2003-04 and continued till the world-wide depression 2008-09. The most structural change that occurred was industries shift towards capital intensity with rise in productivity of labour. Employment did not grow. It appears that industry is moving towards growth without jobs.]

1. Introduction

The subject of industrialization in India has received the attention of scholars and policy formulators over the years. This paper makes an attempt in terms of output growth, employment growth and change in the structure of the industry to assess Indian industrialization experience. The focus will be on post-reform period from 1991–2010. However, the pre-reform period is also dealt with in some detail. The growth and structural changes in Manufacturing Industry over a long period has been examined in the following phases:

Phase I: 1950–51 to 1964–65;

Phase II: 1965–66 to 197980;

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Phase III: 1980–81 to 1990–1; and
Phase IV: 1991–92 onwards.

The industrial sector consists of three broad segments, namely manufacturing; mining and quarrying; and electricity, gas and water supply. In this paper, we are concentrating only on the organized manufacturing sector.

2. Immediate Post Independence Era (Phase I)

At the time of independence, industries such as sugar, vegetable oils, cotton textiles, jute textiles, iron and steel smelting, rolling and re-rolling and general engineering were dominant. In terms of both value added and value of production, the main industries were: cotton textiles, jute textiles, sugar, vegetable oils, iron and steel smelting, and general engineering. In terms of employment the same industries were predominant. These industries covered 87.3 per cent of total value added and 85.6 per cent of total employment¹. The industrial production was 5.75 per cent per annum in the period 1951–55 and of nearly 7.5 per cent since the beginning of the Second Five Year Plan. In the first three years of the Third Plan period, the rate of growth has been close to 8 per cent per annum². Since 1957, there has been a production shift towards metal machinery and chemical industries³. From the Second Five Year Plan onwards the emphasis was on enhancing capacities in steel, aluminium, engineering, chemicals, fertilizers and petroleum products. Apart from investment in these industries, emphasis was also accorded to heavy electrical equipment, heavy foundry forge, heavy engineering machinery, heavy plates and vessels. The allocation as a proportion of planned expenditure in industry to metal, machinery and chemical industries were 70 per cent for the Second Plan and 80 per cent for the Third Plan.

Among the industries which show impressive growth rate during 1951–66 were chemicals, petroleum, non-metallic mineral products, basic metals, manufactures of metal products and machinery. A comparison of relative shares at 1960–61 prices in total value added in 1965–66 indicates that the relative shares in the latter years increased in

¹ Bhagwati, J.N. and Padma Desai (1970), *India: Planning for Industrialization, Industrialization and Trade Policies since 1951*, Oxford University Press, London.

² Raj, K.N. (1965), *Indian Economic Growth: Performance and Prospects*, Allied Publishers, New Delhi

³ Machinery includes machine tools, electrical and non-electrical machinery and equipment and transport equipment. Chemicals include oil refining and manufactures of fertilizers.

categories such as chemicals and chemical products, basic metals and other primary products, electrical engineering and equipment, transport equipment and machinery⁴.

Table-1
Gross Value Added, Gross Output at Factor Cost, Gross Output at Current Market Prices by Industry Groups (per cent) of Total

	1951	1957	1961	1965
I) Gross value added				
a) Investment goods	6	10	18	21
b) Raw materials & intermediates	36	37	34	40
c) Consumer goods	58	53	48	38
II) Gross Value added at factor cost				
a) Investment goods	4	10	16	19
b) Raw materials and intermediate goods	32	33	33	38
c) Consumer goods	64	57	52	43
III) Gross Output at market prices				
a) Investment goods	4	10	15	18
b) raw materials & intermediaries	31	31	32	37
c) Consumer goods	65	59	54	45

Note: Industry group shares in gross value added, gross output at factor cost and gross output at market prices.

Source: Bhagwati, J.N. and Padma Desai (1970), *India: Planning for Industrialization, Industrialization and Trade Policies since 1951*, Oxford University Press, London.

For the entire period 1951–63, import substitution in the investment group predominates. At the outset, it appears that the industrial policy has impacted: 1) role of public sector investment; 2) location of public and private industries; 3) role of small and cottage industry; 4) Industrial licensing; and 5) foreign investment. The rise and growth of the public sector during the three plans was attributed largely to the “socialistic ideological” goals. The federal set up has directly affected the location of industry. The states were scrambling for share in public or private investment. This led to inefficiencies due to unreasonable locations of specific plants. The planners neglected spatial planning. The majority of the industrial targets have no space dimension. The relative political strength of the states *vis-à-vis* the centre determined the industrial locations.

The pattern of industrial licensing besides political impact on location and scale decision has been sensitive to political issues such as the concentration of economic power and wealth. The industrial licensing was largely accorded to outside big business houses and

⁴ Raj, K.N. (1966), “India, Pakistan and China: Economic Outlook and Growth,” Sastri Memorial Lecture II (Unpublished), Table 6.

towards the small investors which led to breaking up of capacity in smaller units which in turn adversely affected the competitiveness.

Ever since the First Five Year Plan, the industrial development has been intensively regulated. Investments in public sector enterprises have been subject to direct planning in choice and implementation. But even private sector industrial investments have been directed by the state, by physical controls operated through an exhaustive licensing system combined with detailed setting of targets by the Planning Commission in the case of the formulation of the successive Five Year plans. The system was operated to determine: a) the pattern of investment down to product-level, and b) the choice of technology, extending to scale, expansion, location, direct import content, and terms of foreign collaboration in finance and know-how. The economic evaluation of the industrial planning techniques and procedures till the end of the Third Plan shows the tendency to work within the framework of detailed physical targets, derive any reference to costs and benefits and also industrial licensing and trade policies⁵ designed to make corresponding investments profitable. The industrial licensing revealed that a) it operated without any obvious economic criteria to choose between alternative projects, even within the targeted capacities; b) it has been ill-designed and concerned with excessive detail, contributing to significant delays without any corresponding improved economies of licensed capacities; c) it led to an accentuation of some of the undesired features of an unplanned expansion of industries which in turn led to concentration of ownership of industries in a few hands. In Prof. Bhagwati's words "the undue reliance on industrial licensing, which is essentially an instrument for control, also led to a neglect of instruments for encouraging investments in priority areas to reach the targeted levels."

The methods used in target-setting in the industrial sector changed during the first three plans. The industrial targets were few in the First Plan and were near to the projections of industrial capacities based on rough estimates. However, this estimate-cum-target served as a basis for the operation of the comprehensive Industries (Development and Regulation) Act, 1951. There has been a paradigm shift in the Second Plan and it emphasised shift in favour of capital goods industries⁶. The model provided the rationale for a shift in industrial investments towards building up a capital goods base. The Second Plan did not explicitly state the rationale of the shift to heavy industries in terms of foreign trade constraints and it assumes stagnant world demand for Indian exports. The export prospect was viewed with pessimism. The Third Plan continued basically on the

⁵ Trade policies are critically important, particularly import control measures, namely quantitative restrictions which provide automatic protection to domestic industries.

⁶ This was known as Mahalanobis two-sector model.

same strategy with sizeable investment in heavy industries. The target setting for each industry became pivotal. These targets were not indicative but were treated as full-scale targets with regard to which Industrial Licensing Committee operated. The shortfall in targets was considered as failure of the Planning. However, the point that needs to be underlined is that industrial targets influenced industrial growth significantly but they could not determine it. The facts observed were: 1) shortfall in available inputs and foreign exchange, delayed execution, exigencies of the licensing procedure itself and similar factors often held up fulfilment of targets by holding up licensing or installation of licensed capacities or their utilization to achieve target levels of production; 2) the reliance on licensing could restrict but not encourage investments by the private sector in fulfilment of the targets. This explains the shortfalls in cement and coal production during the Second and the Third Plans. Apart from this, the programme for industrial development did not provide the total picture of the intended industrial developments in the private sector.

The investment approvals granted during the three plans, for investment in areas not covered by the plan targets are not available. It may be in the range of 25–30 per cent of licensed private sector investments in organized industrial sector during the first two plans and was less in the Third Plan⁷. Besides, investments below a certain sum were exempted from the licensing procedures and could not proceed without any effective control and made target-setting ineffective. The industrial licensing was confined to the “scheduled” industries whose coverage become large since 1956 but still it was not exhaustive.

The Industries (Development & Regulation) Act of 1951 and the Industrial Policy Resolution of 1948 provided framework for the licensing and regulation of industrial investment during the Five Year Plans. The main objectives of the Industrial Policy Resolution were: 1) development and regulation of industrial investments and production according to plan priorities and targets; 2) production and encouragement of “small industries;” 3) prevention of concentration of ownership of industries; and 4) balanced economic development of the different regions, so as to reduce disparities at the level of development⁸. The initial list of scheduled industries covered only 42 major industries but eventually expanded to include additional 28 industries in 1956. All major industries were covered at the time of 1966 devaluation. All industrial licenses were cleared by the Licensing Committee (inter-ministerial) which was set up in 1952 to

⁷ Bhagwati and Desai (1975), *Op. cit.* 1

⁸ Hazari, R.K. (1967), *Industrial Planning and Licensing Policy*, Planning Commission, Government of India, New Delhi.

operate within the framework of 1951 Industries Act⁹. The applications were placed before the Licensing Committee for approval only when they had already been recommended by the Administrative Ministry with in whose jurisdiction the specific industry would lie. Where such recommendation with held, the application went to the Rejection Committee for reconsideration for grant or rejection of the license. The final decision on the issuance of the license was taken on the advice of these committees, at the level of minister for industrial development.

A Directorate General of Technical Development (DGTD) was set up to examine the technical angle of the application and it was entrusted with the task such as looking into the capacity of production from import substitution and export possibilities, technological soundness, assessment of the existing technology, indigenous content and location of the plant. There were a number of physical controls to be cleared by the prospective investor which includes capital goods licenses, import license, terms and conditions of the foreign collaborations and local finance clearances.

The licensing system was supposed to operate within the framework of targets which had been worked out by the Planning Commission. Its function was to ensure that within this framework, the actual choice of plants, technologies, location, etc., was carried out which would ensure social profitability. To say the least, the Licensing Committee operated in an ad hoc manner without any criteria on which applicant could assess his chance of getting license. Many applicants felt that they could not understand the principles for either giving or rejecting industrial licensing. The guidelines changed often. In absence of priorities and flexibility of inter-related programmes at various levels of performance, there has been a tendency to rely upon various ad hoc criteria. The DGTD was unable to evolve any appropriate techno-economic work which would improve efficiency of industrial planning and regulation¹⁰. Capital goods licensing (CGL) took more time to obtain decisions. The time cost was totally ignored.

The operation of the licensing system was extended only to units over a certain size. In 1960, all industrial undertakings in the scheduled industries employing less than 100 workers with fixed assets less than ₹10 lakh were exempt from licensing. From 1964, the

⁹ There were also powers for regulating the supply, distribution and prices of the products of the selected industries. In 1953, extensive powers were given to the government to order an investigation of any scheduled unit or industry on suspicion that output has been reduced or price had been increased or quality had been deteriorated without "justification" and thereafter to takeover its management if necessary.

¹⁰ The quality of the DGTD work can be judged from the report of the 9th Report of the Estimate Committee, p. 207.

exemption limit for industries in terms of fixed assets employed was raised to ₹25 lakh, except few industries such as coal, textiles, leather and matches. There was no economic rationale in operating with such exemptions given the fact that the licensing system was aimed at operation of the industrial sector within the framework of targets. Basically the licensing system distinguished between three categories, namely; 1) new undertakings; 2) substantial expansion; and 3) manufacture of new articles. For setting up new plants the Industries Act laid down that no substantial expansion could be undertaken by any licensed or registered industrial undertaking without prior procurement of license. The definition of 'substantial' was defined. Even improvement in productivity arising from greater efficiency would not be accepted as legitimate. Further, where expansion involves more than one phase, the practice has been to sanction only first phase of expansion without any assurance that subsequent expansions would follow automatically. This created considerable amount of uncertainty. The government felt that unchecked expansion may create monopoly. The diversification of production was to be permitted, with many restrictions, including ceiling of 25 per cent of the capacity. Complete restrictions on diversification continued through the entire period of the first three plans. In a nutshell, the licensing procedures devised were without reference to efficiency and planning.

On location policy, the Industries Act 1951, the Industry Policy Resolutions and Five Year Plan documents have stressed the need for balanced development. In a federal country like India, the regional claims mount and it will be difficult to come to terms with states' pressures and pulls. This led to regional imbalance in industries distribution. On top of that the Licensing Committee had no clues as to the optimal size, location, and the phasing of expansion of plants. The failure was that of industrial planning. Industrial planning in India failed to reduce the cost of such constrained system to its minimum and operated with a consistent bias in favour of plants being reduced to uneconomic scale most of the time¹¹.

The licensing and regulation system in checking the concentration of industrial ownership and the promotion of a competitive system worked in the reverse direction. The Monopolies Inquiry Commission (1965) noted that bigger business houses could utilize the licensing-plus-targeting system to the detriment of smaller rivals¹². The bigger houses could put in for licenses more quickly because they were better informed and organized. Further, the implicit acceptance of the availability of foreign collaboration and

¹¹ Bhagwati, J.N. (1962), "Economies of scale". *Economic Weekly*, September 1.

¹² The percentage of licenses issued to those applied for works out at 71.6 per cent for big business and 65.1 per cent for rest according to the 9th Report, p. 173.

finance was given priority. Big business houses with international contacts could easily secure licenses. The big houses realized that they could corner high proportion of targeted capacity by putting multiple and early application for the same industry and build a dominant place in the industry where they worked.

The attempt at controlling the growth of industrial houses in different industries by industrial licensing became ineffective due to absence of provisions for preventing acquisition of existing undertakings by the large industrial houses. Bhagwati has pointed out another fundamental defect of the licensing-plus-targeting system, combined with strict quantitative restrictions on competing imports and non-transferability between firms of actual user import licenses for raw materials and components. The large segment of the Indian economy was working under monopolistic conditions. The creation of new capacity in the organized industrial sector was strictly controlled by the government at various levels, namely capital issues control, licensing, permission to import machinery. The government works with set targets. This makes new entry impossible because the government will not allow creation of more capacity than currently estimated demand. This rules out the elimination of inefficient current producers by efficient new entrants. It also rules out the possibility of the more efficient current units expanding and eliminating the current inefficient units because the expansion is based on targets. This also rules out any domestic competition.

The target-setting had a weak economic basis in industrial planning. Industrial licensing restrained the growth capacity. Licensing procedures were not designed to ensure fulfilment of targets, monitoring was weak and criteria of efficient choice among applicants were not defined. It did not help in achieving better balance in industrial location and eliminate concentration of economic power and monopolies. No procedures were devised to achieve growth without minimum economic cost. In some cases the procedures were contrary to the set objectives. By 1965–66, the government began to initiate alternative industrial planning with some doze of economic liberalism.

Many controls were motivated by a desire to ensure allocation of adequate quantity of priority sectors at reasonable price. For example, the control over iron and steel had both price and distribution. The Raj Committee¹³ investigated and observed that in the absence of priorities for allocation, the public sector steel was being sold to private sector users at controlled prices, where these users were under no obligation to price their outputs on cost-plus basis. The effect of such price control was merely to have subsidized

¹³ *Report of the Raj Committee on Steel Control* (1963), Ministry of Steel and Heavy Industries, Government India, New Delhi.

industries, enabling them to earn huge profit. This in effect was the revenue loss to the government and no benefit to the final user.

The First Five Year Plan (1951–55) experienced relative liberalization of imports due to accumulated sterling balances withdrawals. The import control regime tightened in the Second Five Year Plan period. However, there were some changes in the administrative procedures with less reliance on import controls and shifting towards tariff mechanism. The year 1954 saw substantial changes in the tariff structure effected by Indian Tariff (Second Amendment) Act, 1954. Import duties were increased on 32 items. As a result of import policy relaxation, quota percentage in many cases was increased. In other cases, provision was made for the issue of additional licenses over the normal entitlements. However, these progressive measures have to be abandoned due to foreign exchange crisis which began at the beginning of the Second Five Year Plan. Import control became tighter and principle of priorities for the allocation of foreign exchange took precedence.

The import and exchange policy regime aimed at comprehensive, direct control over foreign exchange utilization. Administrative decisions became important in the allocation of foreign exchange to all users. The government did not make use of tariffs with exception of commodities such as crude rubber, pulp and waste paper, cotton and kerosene. Reliance on direct allocative mechanism was almost complete during this period. The allocation of permissible import was broadly placed into two categories: private and public sector. There was further operational distinction between imports of raw materials, spares and components as against imports of capital goods and equipment. The allocation of different permissible import by these categories among industries and further by firms and plants, was carried out by an administrative machinery throughout this period. For every six months foreign exchange budget would prepare estimate of available foreign exchange. The first priority items were foreign debt repayment, embassy expenses, defence, food and fertilizers. The second segment consisted of: 1) public sector undertakings for raw materials and components; 2) iron and steel, and 3) private sector imports. The small-scale sector also had some allocations of foreign exchange. Different ministries were involved in this exercise. The licenses issued by the Chief Controller of Imports and Exports (CCI &E) constituted the bulk of foreign exchange which were divided into: 1) established importers (EI); 2) actual user (AU); 3) new comers (not covered by EI and AU); 4) ad hoc (State Trading Corporation imports); 5) capital goods (CG); 6) heavy electrical plants (HEP); 7) export promotion; and 8) miscellaneous categories (such as railway contract, replacement license and blanket licenses for POL).

The procedures adopted by each category of licenses reflected two major criteria: 1) the principle of 'essentiality'; and 2) the principle of 'non-availability'. The imports that

qualified on both the accounts were allocated foreign exchange. There were clearing agencies, certifying agencies and sponsoring agencies involved in the process. In the first instance, the essentiality had to be certified; in the second stage indigenous non-availability had to be cleared; and finally, it had to be sponsored by some government agency. The procedures were complex. For public sector, the procedures were similar and at times it was even more complex. First, they had to obtain sanction from Department of Economic Affairs, in addition to indigenous clearance and essentiality certification to get approval for imports. Industry-wise allocation was determined on the weight of the number of firms within each group. It was difficult to determine priorities. The agencies involved in determining industry-wise allocations used notions of fairness, implying pro-rata allocations with reference to capacity installed or employment or shares defined by past import allocations without any clear rationale.

In allocating foreign exchange to the small units certain broad priorities were pursued by the administration and they were: a) the small-scale sector should be supported; and b) the foreign exchange should be saved for investment by curtailing its utilization of consumer goods. The defence of import control system was that it ensures supplies on a 'fair and equitable' basis to small units. This argument does not stand for economic efficiency but it was valid for income redistribution argument in the absence of alternative method of subsidizing small units. The fact is that the controlled system discriminated against the small sector. The evidences indicate that small industries were given raw deal while allocating foreign exchange to various sectors of industry¹⁴. The large industries were given licenses for imports on the basis of their capacity while small units received only on an ad hoc basis, irrespective of their capacity. Further, the administrative procedures followed for small units were also more complicated than those for the large industries. Even within the small scale sector, relatively large enterprises got a higher proportion of their assessed capacity covered by the allocation than smaller ones.

The import control system functioned basically on: 1) incomplete and non-systematic information; 2) lack of economic criteria; and 3) ad hoc administrative rules by a time consuming bureaucracy. Corruption increased due to a large premium on imports under control. The system generated two kinds of illegality: 1) since imports were remunerative, there were innumerable bogus claims on import license entitlement under the existing rules of allocation; and 2) since numerous restrictions obtained with respect to transferability of imports and import licenses, black market thrived on such illegal

¹⁴ It was found that larger firms received 85% of their one shift requirement, whereas small firms received only 33–40% of their one shift requirement.

traffic¹⁵. Many restrictions on permissible imports were evaded through smuggling. The state governments were not exempt from diverting materials and imports allocated for specific use, however, they did not adhere to this rule and they off-loaded imports into the black market to earn higher premium.

The exchange control system involved time-consuming administrative process. There were essentially three reasons: 1) the definition of priorities became difficult and system ended up having to accommodate all demands of foreign exchange allocation on some equitable basis with pretention of priorities. For that, collection of information took more time; 2) this led to multiplication of bureaucratic set up which led to time-consuming process¹⁶; and 3) files failed to move until suitable graft was paid to lower level officials. Further, the import control system imposed costs in the form of paper work, frequent travel by the officials and the social cost implicit in diverting entrepreneurial interest away from improvements in production and investment towards getting past controls as a more efficient method of increasing profits.

The principles of 'essentiality' and 'indigenous non-availability' also imparted lot of inflexibility to the utilization of imports. This occurred due to rigid itemization of permissible imports, frequently by specified value for different items for A.U and E.I. licenses. The A.U. allocations were made on the basis of well-defined priorities at detailed industry-levels. The authorities ruled out legal transferability of licenses among the different industries and also eliminated transferability even among the units within the same industry, thus making A.U. licenses totally non-transferable by licensee units. This inflexibility led to economic inefficiency due to: 1) the total A.U. allocations to individual units were not well defined and not based on assessment of accuracy and proper information. They were based on notions of 'fair sharing'; and 2) the itemized breakdown was based on indigenous non-availability and on ad hoc basis. The inflexibility arising from the non-transferability of import licenses had compelled the firms to hold big inventories, particularly raw materials and intermediates. The import control regime converted industries into prisoners of the system.

¹⁵ The estimate committee of Lok Sabha has given interesting list of the malpractices resorted by persons in import and export trade. See *Estimates Committee* (1963–64, Third Lok Sabha), 48th Report, Lok Sabha secretariat, Government of India, Pp. 104–105.

¹⁶ To obtain import license for raw materials for SSI units it took 163 days, for non-SSI units 219days, for scheduled industries 140 days and Scheduled industries on DGTD 149 days. For public sector projects 20 days and export promotion licensing 80 days. See Bhagwati and Desai (1975), *Op. cit.* 1, p.314; also, Mathur Committee Report, 1965.

The import allocation system had eliminated the possibility of competition either from foreign or domestic enterprises. The principle of indigenous availability, every item of production irrespective of cost of production was shielded from competition through imports. The possibility of domestic competition was minimised by combination of C.G. licensing and method of A.U. licensing on 'fair share' basis among rival firms in an industry. Strict C.G. and industrial licensing eliminated free entry by new firms and also efficiency-induced expansion by existing firms. The fact was that all forms of effective competition, actual and potential, were eliminated from the industrial system. Relating equity in allocations of foreign exchange to installed capacity led to bias towards creation of new capacity despite under utilization of capacity. Building capacity was linked to increased entitlement to premium earning imports. An entrepreneur with given capacity which was underutilized due to lack of imported inputs, would not be in position to expand through additional utilization of capacity even if it is profitable. The only way he could respond was by increasing more capacity to obtain some more import quota. The entrepreneur has to buy import quota through illegal means in the black market or he can obtain the import entitlement under export promotion schemes¹⁷. The import policy regime has bias in favour of industries which were using imported inputs as against domestic inputs. The A.U. system of allocation of imports, combined with the principle of indigenous non-availability would enhance the quantum of import allocation. The fact was that the import allocation inversely related to the availability of indigenously produced inputs. This in turn led to a bias in effective incentive provided to the firms which use relatively more imported inputs. The import system gave rise to differential incentive as an incidental side-effect.

The principle of indigenous availability was used to exclude or restrict imports in favour of purchase of domestic import substitutes. This in turn, automatically extended protection to all industries irrespective of cost, efficiency and comparative advantage. The policy of automatic protection that inherited the import policy served to divorce market-determined investment decisions. The implicit nominal tariff rates under the system went as much as 300–400 per cent in some cases¹⁸. This was all due to policies of automatic protection and controlled distribution of A.U. licenses among industries. The explicit tariff had fallen into disuse during the period 1956–1965 from the point of view of their protective effect. Further, the system discriminates against the exports. The effective export rate on an average was less than the effective import rate till 1962 and therefore,

¹⁷ The import entitlements under the export promotion schemes were legally transferable and market developed for them in 1965

¹⁸ In case of camphor, the implicit tariff varied between 430 to 630 per cent between 1961 and 1965. In case of crystal between 118 to 465 per cent, dextrose anhydrous 53 to 650 per cent, and thymol 128 to 422 per cent during the same period. See Bhagwati and Desai, *Op. cit.* 1.

export subsidization scheme began to redress through not to restore the balance. The principle of indigenous availability forced the exporters to use inferior quality domestic inputs. The entire industrial licensing and import policy was unfavourable to manufacturing exports largely due to an inward bias.

The effect of import control system was the loss of revenue and passing the profits on scarce imports on to the private sector. Imports are routed through traders. The import scarcity value reflects rise in prices of goods. If the government has routed this through its agencies or auctioned them off or levied suitable tariffs, the scarcity premium would have accrued it as revenue. The entrepreneurs who have obtained A.U. licenses for imports would pass on the cost to the market and obtain profit. To sum up, the import control regime had the following adverse economic effects: 1) delay; 2) administrative and other expenses; 3) inflexibility, 4) lack of coordination among different government agencies; 5) absence of competition; 6) bias towards creation of capacity despite under utilization; 7) inherent bias in favour of industries with imports as distinct from domestically produced inputs; 8) anticipatory and automatic protection afforded to industries regardless of costs; 9) discrimination against exports; and 10) loss of revenue to the government.

3. Era of Controls and Regulations (Phase II: 1966–67 to 1979–80)

The period between 1951 and 1965 witnessed an increase in industrial production by 2.8 times, whereas the period 1966–80 saw an increase by only 1.8 times. On compound rate of growth it was 5.8 per cent for the three-decade period. The rates for the 1951–60, 1960–70 and 1970–80 decades were: 6.9 per cent, 6.3 per cent, and 4.2 per cent respectively. For the period 1951–65 it was 7.7 per cent and for 1965–80, it was 4 per cent. The rate of growth was negative for the year 1966 and 1967 with 0.5 per cent and 0.4 per cent respectively. For all other years it was positive. This can be seen from *Table-2*.

The growth rates were marked by wide fluctuations (*see Table-2*). Thus, for example, of the years with positive growth rates, 1980 with 0.8 per cent showed the lowest rates and 1976 with 9.8 per cent the highest in the period between 1965 and 1980. The entire period of 1965–80 has turned out to be a low growth period. The rate of growth had fallen short of targets, especially during the post-third plan period. For example, 4th and the 5th plans stipulated the rates of growth at 8 per cent, as against this, the rates realized were just 4.7 per cent and 5.9 per cent respectively. What were the relevant factors in explaining the low growth in the period between 1965 and 1980? The emphasis on industrial policies remained more or less same during this period except the interlude of two and a half years since mid-1977. During this period, rural development received priority. The objectives of industrialization differed to some extent, the factors such as the

prevention of concentration of economic power in private sector, reduction in regional balances and promotion of small industry did receive more emphasis than before.

Table-2
Index of Industrial Production and Rates of Growth 1965–80 (1970 = 100)

<i>Year</i>	<i>Index No.</i>	<i>% increase or decrease over previous year</i>
1965	83.5	9.3
1966	83.1	-0.5
1967	82.8	-0.4
1968	88.4	6.8
1969	95.1	7.6
1970	100.0	5.2
1971	104.4	4.2
1972	110.6	5.8
1973	111.1	1.6
1974	113.2	2.1
1975	119.2	4.7
1976	133.7	9.8
1977	138.3	5.3
1978	147.8	6.9
1979	149.5	1.2
1980	150.7	0.8

Source: Sandesara, J.C. (1987), "Industrial Growth in India – Performance and Prospects" in V.S. Mahajan (Ed.) Studies in Industrial Economy of India, Vol. 1, 1987, Pp. 24–25, Deep and Deep Publications, New Delhi.

By the time of devaluation in June 1966, the government made some efforts to liberalize the import control regime, however, they were partial and halting. The exchange rate remained overvalued and import premium remained high. Indo-Pak war in 1965 and subsequent drought in the domestic economy increased the import premium. The suspension of foreign aid also added to the problem. In June 1966, the rupee was devalued by 57.5 per cent in terms of dollar (the official rate increased from ₹4.76 to ₹7.50). Owing to the high domestic inflation, it has been estimated that it was about 30 per cent in real terms. The devaluation was accompanied by some relaxation of import licensing, tariff reductions and abolition of some export duties.

However, the devaluation did not bring about desired results in improving conditions in the domestic economy. Industries failed to respond and inflation continued to soar further. By 1968 tight import licensing had been reinstated. Under this regime, the imports of nearly all consumer goods was effectively banned and the only imports allowed were intermediate materials, components and capital equipment provided 'actual users' could show that they were 'essential' and not 'domestically available'. The

tariff duties came back to the pre-devaluation period. It remained about the same during the 1970s. It helped to transfer some of the import licensing rents to the government, and was irrelevant as protective instruments, except to the extent that they influenced the cost of imported intermediates and equipment that was not locally produced. This remained the situation until the end of 1970s, when the new phase of very slow partial liberalization commenced. Although, the import entitlement schemes were abolished with the devaluation, they were soon replaced in August 1966 by import replenishment schemes. Under the scheme, exporters were assigned import licenses of a value which were pre-specified percentage of *f.o.b.* export value. Besides, the government introduced several export incentive schemes.

The Monopolies Inquiry Commission (MIC) concluded that the industrial licensing system enabled big business houses to obtain disproportionately large share of licenses which led to pre-emption and foreclosure of capacity. Subsequently, the Industrial Licensing Policy Inquiry Committee (Dutt Committee) constituted in 1967, recommended that larger industrial houses should be given licenses only for setting up industry in core and heavy investment sectors, thereby necessitating reorientation of industrial licensing policy. In 1969, the Monopolies and Restrictive Trade Practices (MRTP) Act was introduced to enable the government to effectively control concentration of economic power. The Dutt Committee had defined large business houses as those with assets of more than ₹350 million. The MRTP Act 1969 defined large houses as those with assets of ₹200 million and above. Large industries were designated as MRTP companies and were eligible to participate in industries that were not reserved for the Government or the small scale sector.

The new Industrial Licensing Policy of 1970 classified industries into four categories. First category, termed as 'Core sector', consisted of basic, critical and strategic industries. Second category termed as 'Heavy Investment sector' comprised projects involving investment more than ₹50 million. The third category, the 'Middle sector' consisted of projects with investment in the range of ₹10 million to ₹50 million. The fourth category was 'De-licensed sector' in which investment was less than ₹10 million and was exempted from licensing requirements. The industrial licensing policy of 1970 confined the role of large business houses and foreign companies to the core, heavy and export-oriented sectors. With a view to prevent excessive concentration of industrial activity in the large industrial houses the industrial policy statement was made in 1973. It gave preference to small and medium enterprises over the large houses and foreign companies in setting up new capacity, particularly in the production of mass consumption goods. New undertakings up to ₹10 million by way of fixed assets were exempted from licensing requirements for substantial expansion of assets. This exemption was not

allowed to MRTP companies, foreign companies and existing licensed or registered undertakings having fixed assets of ₹50 million and above.

The Statement of 1977 Industrial Policy further emphasised decentralization of industrial sector with increased role for small scale, tiny and cottage industries. It also provided for close interaction between industrial and agricultural sectors. Highest priority was accorded to power generation and transmission. It expanded the list of items reserved for exclusive production in small scale sector from 180 to more than 500 items. For the first time, within the small scale sector, a tiny unit was defined as a unit with investment in machinery and equipment up to ₹0.1 million and situated in towns or villages with a population of less than 50,000 (as per 1971 census). Basic goods, capital goods, high technology industries important for development of small scale and agriculture sectors were clearly delineated for large sectors. It was also stated that foreign companies that diluted their foreign equity up to 40 per cent under Foreign Exchange Regulation Act (FERA) 1973 were to be treated at par with the Indian companies. The policy statement of 1977 also issued a list of industries where no foreign collaboration of financial or technical nature was allowed as indigenous technology was already available. Fully owned foreign companies were allowed only in high export-oriented sectors or sophisticated technology areas. For all approved foreign investments, companies were completely free to repatriate capital and remit profits, dividends, royalties, etc. Further, in order to ensure balanced regional development, it was decided not to issue fresh licenses for setting up new industrial units within certain limits of large metropolitan cities (more than 1 million population) and urban areas (more than 0.5 million population).

After the devaluation of 1966, the rupee continued to depreciate throughout 1970s. It helped to reduce the current account deficit despite large increase in petroleum imports after the 1973 oil price hike. At the same time, fairly substantial foreign exchange reserves were also built up. This improved current account situation led to rapid expansion of imports, with which slow growing exports created large current account deficits in 1979 and 1980. The crisis was averted in 1980 and 1981 with the help of an IMF loan. Besides import licensing, the government also used industrial licensing to regulate the growth of industrial capacity. There has been a partial industrial de-licensing in 1970s, essentially in the form of exemptions of certain industries from industrial licensing. Formally, eleven industries were decontrolled, including iron and steel casting and structurals, cement and pulp. The government also made its intension clear that it would continue to attempt such a decontrol in regard to industries which did not make substantial demand on foreign exchange through importation of components and raw materials and also did not encroach on areas sought to be reserved for the small scale sector. The government eased the scope and restrictiveness of industrial licensing for the licensed industries by raising

the exemption limit for industrial licensing units which sought to invest less than ₹2.5 million. The 1970s liberalization was largely a halting and ill defined move towards more efficient system.

The mid-1960s and -1970s witnessed stagnation in industrial growth. There has been a significant slow-down in the growth of heavy industries and slow and indifferent growth of other industries. The main factors that contributed to this industrial stagnation were: 1) slow growth of agricultural incomes and their impact on constraining demand for industrial goods; 2) the slow-down in public investment after mid-1960s with its impact on infrastructural investment; 3) poor management of infrastructural sectors, leading to severe infrastructural constraints; and 4) the industrial policy framework, including both domestic industrial policies and trade policies and their effect in creating a high cost industrial structure in the economy¹⁹.

At the outset it appears that the growth of wage goods was not a retarding factor on growth of industrial sector. The slow-down in the growth of commercial crops may have constrained the growth of agro-based industries only to a limited extent. The slow growth of agricultural incomes leading to slow generation of demand for consumer goods was another factor constraining the growth of consumer goods. The growth of agricultural income was slow and it was around 2.5 per cent per annum between 1956–57 and 1979–80. The growth of population was 2 per cent per annum—this provides the growth of per capita income less than 0.5 per cent per annum. But this growth was not sufficient to make any dent in the slow growth of agricultural incomes. This generated slow demand for consumer goods. This was the main constraint in industrial growth. This was coupled with the supply constraints emanating from the infrastructure sector, the regulatory framework and poor productivity performance.

The slow-down in public investment after the mid-1960s was a consequence of a number of factors. Two severe agricultural droughts in succession, with their adverse effect on the economy, were accompanied by a major decline in foreign aid. This was also coupled with the failure of public saving to keep pace with the growing investment demands of the public sector. Further, the relative conservative attitude of the government about deficit financing resulted in a marked slow-down in public investment. The private investment also slowed down to some extent during the mid-1960s. The slow-down in private investment was marked in fixed capital formation than in the overall capital formation. As public investment slowed down, this led to a direct setback in the demand

¹⁹ Ahluwalia, Isher Judge (1985), *Industrial Growth in India: Stagnation in the Mid-Sixties*, Oxford University Press, Delhi, Pp. 166–172.

for certain heavy goods industries, for example, railway wagon producing industries. The boosting of public investment in specific sectors may have secured higher utilization of capacities in the short-run. Much more significant than the demand side impact of slow-down in public investment was its supply side impact. The cuts in public investment were distributed across sectors and it led to basic supply bottlenecks in the economy.

The under-investment in the infrastructure sectors was associated with evidence of growing inefficiency in these sectors. These inefficiencies cover the entire spectrum from formulation to project implementation and spread to operational stages. Time and cost overruns were common features. To some extent, inefficiencies in the operational stages arose because of failure in input supplying sectors, particularly supplies of coal to the power stations. The management of power sector was defective due to inefficiencies in the State Electricity Boards which were in the public sector. The impact of under-investment and inefficiency in the interdependent sub-sectors of infrastructure led to a marked deterioration in electricity generation and the freight traffic moved by the railways. These bottlenecks had an adverse effect on the industrial sector. The supply side constraints generated by infrastructure were compounded by an industrial policy framework which was directed towards regulation rather than development of industry. The industrial planning strategy based on ambitious public investment programme directed at developing heavy industries in the economy. The process was facilitated by policies of import substitution which led to export pessimism.

This phase continued with policies towards protecting infant industries which was desirable for a country like India. The process of import substitution was performed inefficiently. There was no phasing out of import substitution for any specific industries, the process of granting import substitution was not systematic. The setting up of indigenous capacity was considered as a sufficient condition for import substitution irrespective of cost and quality considerations. This resulted in high cost of industrial structure incapable of surviving without high protection. This totally discouraged foreign competition. The system provided no incentive for improving efficiency, reducing costs and raising quality. In the mid-sixties the industrial sector underwent significant diversification. There was an increasing tendency to rely upon various ad hoc criteria of controls. Delays were common. The government administration was bias towards regulation rather than promotion of private industry which was assigned the task of providing consumer goods. In view of the constraints on growth of public investment, the government should have created conducive environment for the growth of consumer goods industries but it did not happen. All these elements together contributed to retardation of growth of industries. The contribution of total factor-productivity was negligible or negative for most industry groups.

Stagnation in industrial growth that started in mid-sixties was due to combination of various adverse factors. To counter inflationary pressures, public investment had to be cutback and rupee had to be devalued. The economy suffered from successive droughts in the mid-sixties which fuelled inflation. The resource crunch developed and willingness to invest, too, slackened. Public sector investment mostly went into steel, fertilizers, and oil refineries rather than to infrastructure. The rise in the prices of international oil made a deep dent into foreign exchange. The under-investment in infrastructure led to shortage of coal, power, and rail transport. As a result, there was under-utilization of installed capacity in a wide range of industries, with a significant slowing down of the rate of growth both in public and private sectors. The concern with regional dispersion often led to an uneconomic choice of location and at times forced the fragmentation of production by encouraging proliferation of uneconomic scale of production at a single location. The licensing procedure made project implementation time-consuming. The restrictiveness with regard to industrial licensing did drive investment into channels not subjected to controls. However, it was worth observing that growth rate in the small industry sector showed a sharp spurt even while sluggishness afflicted large scale industries.

4. Slow Move Towards Liberalization (Phase III: 1980–91)

This period was a harbinger of economic reform in India. The Industrial policy Statement of 1980 placed an accent on promotion of competition in the domestic market, technological upgradation and modernization of industries. Some of the socio-economic objectives spelt out in the Statement were: 1) optimum utilization of installed capacity, 2) higher productivity, 3) higher employment levels, 4) promotion of export oriented industries, 5) removal of regional disparities, 6) strengthening of agricultural base, and 7) consumer protection against high prices and poor quality. Policy measures were also announced to revive the efficiency of public sector undertakings by developing the management cadres in functional fields, namely operations, finance, marketing and information system. An automatic expansion of capacity up to 5 per cent per annum was allowed, particularly in the core sector and industries with long-term export potential. Special incentives were granted to industrial units which were engaged in industrial processes and technologies aiming at optimum utilization of energy and exploitation of alternative sources of energy. In order to boost the development of small scale industries, investment limit was raised to ₹2 million in small scale units and ₹2.5 million in ancillary units. In case of tiny units, investment limit was raised to ₹0.2 million.

Policy measures initiated in the first three decades since independence facilitated the establishment of basic industries and building up of a broad based infrastructure in the economy. The Seventh Five Year Plan (1985–90) recognized the need for consolidation of

these strengths and initiating policy measures to prepare Indian industry to respond effectively to emerging challenges. A number of measures were initiated towards technological and managerial modernization to improve productivity, quality and reduce cost production. The public sector was free from a number of constraints and was provided with greater autonomy. There was some progress in the process of deregulation during 1980s. In 1988, all industries, excepting 26 industries specified in the negative list, were exempted from licensing. The exemption was, however, subject to investment and locational limitations. The automotive industry, cement, cotton spinning, food processing and polyester filament yarn industries witnessed modernization and expanded scale of production during the 1980s. With a view to promote industrialization of backward areas in the country, the government announced, in 1988, the Growth Centre schemes under which 71 growth centres were proposed to be set up throughout the country. Growth centres were to be endowed with basic infrastructure facilities such as power, telecommunications and banking to enable them to attract industries.

Major sectors of industry are divided into three segments, namely mining, manufacturing and electricity generation. In constructing the index of growth, the weights assigned are: mining - 11.46, manufacturing - 77.11, and electricity generation - 11.43. In the second half of 1980s, both electricity generation and mining indicated a more pronounced decline. Manufacturing sector, on the other side, witnessed an upward trend in growth rates, registering a growth rate of 8–9 per cent in the second half of 1980s. This may be seen from *Table-3*.

Table-3
Annual Growth Rates in Major Sectors of Industry (per cent)

<i>Period</i>	<i>Mining</i>	<i>Manufacturing</i>	<i>Electricity</i>	<i>General</i>
1981-82	17.7	7.9	10.2	9.3
1982-83	12.4	1.4	5.7	3.2
1983-84	11.7	5.7	7.6	6.7
1984-85	8.9	8.0	12.0	8.6
1985-86	4.1	9.7	8.5	8.7
1986-87	6.2	9.3	10.3	9.1
1987-88	3.8	7.9	7.7	7.3
1988-89	7.9	8.7	9.5	8.7
1989-90	6.3	8.6	10.8	8.6
1990-91	4.5	9.0	7.8	8.2

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India, Mumbai, Various years.

The annual growth of industries fluctuated between 3.2 per cent and 9.3 per cent during 1981–82 to 1990–91. By and large, industry maintained the growth rates of above 8 per cent for a large number of years. Among the sub-sectors, the manufacturing sector growth oscillated between 1.4 per cent and 9.7 per cent per annum, however, for a

majority of number of years, it was above 8 per cent. Having more than 77 per cent of weight in the industrial production index, it was a major trend setter. The growth rate of mining declined sharply and that of electricity generation remained more or less stagnant (*see Table-3*). The improvement in industrial performance was due to greater pragmatism with the gradual loosening of controls and greater willingness to import technology and foreign capital to modernize the manufacturing sector. Greater realism in policy making included the stepping up of public investment infrastructure and energy production. The second half of 1980s witnessed considerable de-licensing and relaxation of controls to upgrade industrial technology. Many branches of manufacturing sector saw modernization and expansion of scales of production. The turnaround in industrial output growth in this decade has been widely attributed to liberalization, improvement in public investment and public sector performance.

The growth of total manufacturing during 1981–91 was 7.4 per cent and that of registered manufacturing was 8.2 per cent per annum. At the disaggregate level it varied widely (*see Table-4*). Chemical and chemical products (31), petroleum products (32), non-electric machinery (36), food and beverages (20-21), printing and publishing (28), and rubber products (29) have grown above average growth rates in both segments. According to use-based industrial groups, intermediate goods have grown rapidly and similar was the case with consumer durables (*see Table-5*).

The real value of rupee appreciated slightly in 1981 and held steady at the same level until 1986. A process of slow and cautious liberalization of non-tariff import controls which had started in 1977–78 continued during this period, except for a tightening episode in 1980–81. This was done by expanding the number of non-competing machines, intermediate materials and components on OGL lists and “de-canalizing” other products, i.e. removing them from the list of products which could only be imported by the various government owned or approved “canalizing agencies”. There was also some liberalization of domestic industrial controls, which had an indirect liberalizing impact on import controls. The main thrust of these policy changes was to ease the supply situation of important non-competitive inputs and to give manufacturing industries better and more flexible access to intermediate materials and capital equipment. The steep decline in implicit protection between 1981 and 1985, from about 85–105 per cent to 40–55 per cent suggests that this strategy was successful to some extent, since the reduction in measured protection resulted from a combination of lower domestic prices and higher international prices at a basically unchanged real exchange rate. However, domestic industries continued to be insulated from direct import competition, both by the quantitative restrictive system and by prohibitively high tariffs. This situation got altered substantially in the 1990s.

Table-4
Growth by 2-digit Industry Groups 1981–1991 (per cent)

<i>Industry Groups (NIC)</i>	<i>Total Manufacturing</i>	<i>Registered Manufacturing</i>
20-21 Food and Beverages	7.0	9.5
22 Tobacco	2.9	8.5
23-26		5.5
23 Textiles		5.6
24 Footwear, etc.		5.8
25 wood and cork		1.9
26 Furniture and fixtures		12.8
27 Paper and paper products	(-) 2.7	7.3
28 Printing and publishing	9.1	9.2
29 Leather and fur products	3.8	9.7
30 Rubber products	9.3	9.4
31 Chemical and chemical products	14.7	17.6
32 Petroleum products	9.0	11.8
33 Non-metallic mineral products	5.7	5.8
34 Basic metals	6.0	6.5
35 Metal products	6.0	6.0
36 Non-electric machinery	12.5	10.7
37 Electric machinery	5.5	5.4
38 Transport equipment	11.1	7.7
39 Miscellaneous	7.1	15.3
Total	7.7	8.5

Source: NAS Various Years.

Table-5
Growth in Registered Manufacturing According to Use-based Classification of Output 1980–81 to 1990–91 (per cent per year)

<i>Use Based Groups</i>	<i>1980–81 to 1990–91</i>
1. Basic goods	8.0
2. Intermediate goods	11.2
3. Capital goods	5.3
4) Consumer goods	8.9
a) Consumer durables	12.0
b) Consumer non-durable	8.3

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India, Mumbai.

To sum up, the improved growth rate of manufacturing output since 1980s has not been secured merely by changes in the industrial and trade policies but may be on account of some improvements in the composition of public investment, performance of infrastructure industries, increasing use of manufactured inputs in crop production and also decline in the unfavourable inter-sectoral terms of trade. More importantly, the main objective of the macroeconomic policy stance was to facilitate higher industrial growth

under relatively liberal domestic policy regime²⁰. The changes in trade and industrial policies initiated in the 1980s have enabled firms and industries to operate in a more market sensitive manner to secure increased output and efficiency by better utilization of capacity with increased inducement to invest. Increased capacity utilization led to increase in productivity. However, the policy changes appear to have had little effect in stepping up the rate of investment in the manufacturing sector. Despite the relative liberal import of capital by a freer import of technology and capital and reduction in various physical controls, neither the rate of investment in manufacturing in general nor efficiency of capital goods sector seem to have witnessed any perceptible improvement. However, greater investments in infrastructure had positive impact on industrial growth in the 1980s.

5. Post-liberalization Scenario (Phase IV)

The post-liberalization industrial policy came in the wake of severe balance of payments crunch. The process initiated in the 1980s did bring about some positive results on the industrial growth front. The industrial policy statement of July 1991 stressed that the government would continue to pursue a policy framework encompassing encouragement of entrepreneurship, development of indigenous technology through investment in research and development, bringing in new technology, dismantling of the regulatory system, development of capital markets and increased competitiveness. It underlines the spread of industrialization to backward areas of the country with active promotion through right kind of incentives, institutions and infrastructure investments.

The prime objective of Industrial Policy Statement was to maintain sustained growth in productivity, enhance gainful employment and achieve optimal utilization of human resources, to attain international competitiveness and transform India into a major player in the global arena. The focus of the policy was to unshackle the industry from bureaucratic controls. This needed policy reforms in many areas. In the first instance, a substantial modification in industrial licensing policy was considered necessary with a view to ease restraints on capacity creation, and respond to emerging domestic and global opportunities by improving productivity. Accordingly, the policy statement included abolition of industrial licensing for most industries, with the exception of a few industries for reasons of security, strategic concerns, and social and environment issues. Compulsory licensing was required only in respect of eighteen industries. These included inter alia coal and lignite, distillation and brewing of alcoholic drinks, cigar and

²⁰ Nagaraj, R. (2006), *Aspects of India's Economic Growth and Reforms*, Academic Foundation, New Delhi, p. 153.

cigarettes, drugs and pharmaceuticals, white goods and hazardous chemicals. Small sector continued to be reserved. Norms for setting up industries (except for industries subject to compulsory licensing) in cities with more than one million populations were further liberalized.

Recognizing the complementarity of domestic and foreign investment, the FDI was accorded a significant role in the industrial policy of 1991. FDI up to 51 per cent foreign equity in high priority industries requiring large investments and advanced technology was permitted. Foreign equity up to 51 per cent was also allowed in trading companies primarily engaged in export activities. These initiatives were expected to provide a boost to investment besides enabling access to high technology and marketing expertise of foreign companies. With a view to inject technological dynamism in the Indian industry, the government provided automatic approval for technological agreements related to high priority industries and eased procedures for hiring of foreign technical expertise.

Major initiatives towards restructuring of public sector units were initiated, in view of their low productivity, over staffing, lack of technological up gradation and low rate of return. In order to raise resources and ensure wider public participation PSU's, it was decided to offer its share holding stakes to mutual funds, financial institutions, general public and workers. Similarly, in order to revive and rehabilitate chronically sick PSU's it was decided to refer them to the Board of Industrial and Financial Reconstruction (BIFR). The policy was also provided for greater managerial autonomy to the Boards of PSU's. The Industrial Policy Statement of 1991 recognized that the Government intervention in investment decisions of large companies through MRTP Act has proved to be deleterious for industrial growth. Accordingly, pre-entry scrutiny of investment decisions of MRTP companies was abolished. The thrust of the policy was more on controlling unfair and restrictive trade practices. The provisions restricting mergers, amalgamations and takeovers were also repealed.

Ever since 1991, industrial policy measures and procedural simplifications have been reviewed on an ongoing basis. Currently, there are only six industries which require compulsory licensing. Similarly, there are only three industries reserved for the public sector. Some of the important policy measures initiated are as follows. Since 1991, promotion of FDI has been an integral part of India's economic policy. The government has ensured a liberal and transparent foreign investment regime where most activities are opened to foreign investment on automatic route without any limit on the extent of foreign ownership. FDI up to 100 per cent has been allowed under automatic route for most manufacturing activities in Special Economic Zones (SEZ's). More recently in 2004, the FDI limits were raised in the private banking sector (up to 74 per cent), oil exploration (up to 100 per cent), petroleum product marketing (up to 100 per cent), petroleum

product pipeline (up to 100 per cent), natural gas and LNG pipeline (100 per cent), printing of scientific and technical magazines and journals (up to 100 per cent). In February 2005, The FDI ceiling in telecom sector in certain services was increased from 49 per cent to 74 per cent.

Reservation of items for exclusive manufacture in small scale sector has been an important tenant of industrial policy. Realising the increased import competition with the removal of quantitative restrictions since April 2001, the government has adopted a policy of dereservation and has pruned the list of items reserved for SSI sector gradually from 821 from 1999 to 506 items in 2005. In 2006, further 108 items were de-reserved. Now, only 362 items are under reservations. The investment limit in plant and machinery of small units has been raised from time to time. To enable some of the small scale units to achieve required economies of scale, a differential investment limit has been adopted for them since 2001. Presently, there are 41 reserved items which are allowed an investment limit of up to ₹50 million instead of the limit of ₹10 million applicable for other small scale units. Equity participation up to 24 per cent of the total share holding in small scale units by other industrial undertakings has been allowed. The objective therein has been to enable the small sector to access the capital market and encourage modernization, technological upgradation, ancillarisation and sub-contracting, etc.

The focus of disinvestment process of PSU's has shifted from sale of minority stakes to strategic sales. Apart from general policy measures, some industry specific measures have also been initiated. For example, Electricity Act 2003 has been enacted which envisaged to de-license power generation and permit captive power plants. It also intended to facilitate private sector participation in transmission sector and provide open access to grid sector. Various policy measures have facilitated increased private sector participation in key infrastructures such as, telecommunication, roads and ports. Foreign equity participation up to 100 per cent has been allowed in construction and maintenance of roads and bridges. MRTP provisions have been relaxed to encourage private sector financing by large firms in the highway sector.

Till the onset of reform process in 1991, industrial licensing played a crucial role in channelling investments, controlling entry and expansion of capacity in the Indian industrial sector. As industrialization occurred in a protected environment, it led to various distortions. Tariffs and quantitative controls largely kept foreign competition out of the domestic market, and most Indian manufacturers looked on exports only as a residual possibility. Little attention was paid to ensure product quality, undertaking R&D for technological development and achieving economies of scale. The industrial policy of 1991, however, substantially dispensed with industrial licensing and facilitated foreign investment and technology transfers, and threw open the areas hitherto reserved

for the public sector. The policy focus in recent years has been on deregulating industry, enabling industrial restructuring, allowing the industry freedom and flexibility in responding to market forces and providing business environment that facilitates and fosters overall industrial growth.

During the post-reform period, the structural changes in the Indian economy has been rapid, particularly with high growth in the services sector. This is evident from its increasing share in the GDP. The share of the services sector (it includes trade, hotels, transport and communication, financing, insurance, real estate and business services, public administration, defence and other services) in GDP rose from 44 per cent in 1991–92 to 57 per cent in 2009–10. At the same time, agriculture sector share declined from 33 per cent to 17 per cent and that of industrial sector share increased modestly from 23 per cent in 1991–92 to 26 per cent in 2009–10. *Table-6* provides the detailed picture.

Table-6
Sectoral Share in the GDP in the Reform Period

<i>Sectors</i>	<i>1991–92</i>	<i>2000–011</i>	<i>2009–10</i>
Agriculture and allied activities	33.05	26.18	16.93
Industry (includes construction, electricity, gas and water)	22.90	23.51	25.77
Services (includes trade, hotels, transport and communication, finance, insurance, real estate, business services, public administration, defence and other services)	44.05	50.31	57.30

Source: Economic Survey 2010–11, Government of India.

At the time of economic reform in 1991–92, the industrial growth was very low and was not even 1 per cent. Growth began to pick up from 1993–94 and reached a high of 13 per cent in 1995–96, than tapered off around 5–6 per cent on an average till the end of the decade. The average annual growth rate for the decade as a whole was 6 per cent. The manufacturing sector growth rate was negative in 1991–92; it picked up momentum in 1993–94 and reached a peak of 14 per cent in 1995–96, thereafter settled down in the range of 6–7 per cent till the end of the decade. The average growth rate for the manufacturing sector was slightly over 6 per cent (*for details see Table-7*). It may be observed that towards the end of the decade the growth rate began to taper off. The Asian financial crisis of 1997 and 1998 and a downward cycle in Europe and North America did influence the manufacturing sector growth rate in India.

Other two segments of the industrial sector more or less followed the growth pattern of the industrial sector as a whole. The mining and quarrying sector growth has been low throughout the decade of 1990s with the exception of 1994–95 and 1995–96. This was because of rise in external demand for iron ore from China and Japan. For the decade as a whole, growth rate has been 3.3 per cent. The electricity generation and distribution

sector grew by a healthy 6.6 per cent per annum on an average. However, the growth rate fluctuated in the wide range of 4–8 per cent, with exception of three years during the entire period (*see Table-7*). The private sector was entrusted with power generation and distribution. Some States privatized the power distribution. This did help in improving productivity and efficiency marginally. In spite of this, there have been power shortages in factories in many states. The additional capacity building has been slow and halting. The government policy to attract private investment did not yield adequate response from the private sector.

Table-7
Index Numbers of Industrial Growth (1993–94 = 100) and Growth Rates (per cent)

Period	General		Manufacturing		Mining and quarrying		Electricity	
	Index No	Growth rate	Index No	Growth rate	Index No	Growth rate	Index No	Growth rate
1990–91	91.6	-	92.9	-	95.6	-	81.6	-
1991–92	92.2	0.66	92.3	-0.6	96.1	0.5	88.6	8.6
1992–93	95.4	3.5	94.3	2.2	96.6	0.5	93.1	5.1
1993–94	100.0	4.8	100.0	6.0	100.0	3.5	100.0	7.4
1994–95	109.1	9.1	109.1	9.1	109.8	9.8	108.5	8.5
1995–96	123.3	13.0	124.5	14.1	120.5	9.7	117.3	8.1
1996–97	130.8	6.1	133.6	7.3	118.2	-1.1	122.0	4.0
1997–98	139.5	6.7	142.5	6.7	126.4	6.9	130.0	6.6
1998–99	145.2	4.1	148.8	4.4	125.4	-0.8	138.4	6.5
1999–00	154.9	6.7	159.4	7.1	126.7	1.0	148.5	7.3
2000–01	162.6	5.0	167.9	5.3	130.3	2.8	154.4	4.0
2001–02	167.0	2.7	172.7	2.9	131.7	1.1	159.2	3.1
2002–03	176.6	5.8	183.1	6.0	139.6	6.0	164.3	3.2
2003–04	189.0	7.0	196.6	11.7	146.9	5.2	172.6	5.1
2004–05	211.1	8.0	222.5	13.2	153.4	4.4	181.5	5.2
2005–06	227.9	11.9	242.3	8.9	154.9	1.0	190.9	5.2
2006–07	255.0	8.7	273.5	12.9	163.2	5.4	2004.7	7.2
2007–08	277.1	3.2	298.6	9.2	171.6	5.2	217.7	6.4
2008–09	286.1	3.2	308.6	3.3	176.0	2.6	223.7	2.8
2009–10	316.2	10.5	342.5	11.0	193.4	9.9	237.2	6.0

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India 2010.

Growth of use-based classification of industrial production indicates that consumer durables (9.32%) and capital goods (8.09%) grew rapidly in the post-liberalization period. During 1991–92 to 2000–01 and 2001–02 to 2009–10 growth has been over 9 per cent per annum for consumer durable sector, whereas for the capital goods sector, it was 3.6 per

cent in the first phase and picked up to 12.58 per cent in the latter period. The growth rate of consumer goods (6.83%), intermediate goods (6.79%) and consumer non-durables (6.21%) were at highly satisfactory levels during the post-liberalization period. Only basic goods sector showed relatively slow growth (5.87%) in this period. The growth rate has remained more or less the same in both the sub-periods (*see Table-8*). Capital goods, consumer goods, consumer durables and consumer non-durables grew faster during the period 2001–02 to 2009–10. But reverse was the case with regard to basic goods and intermediate goods.

Table-8
Annual Growth Rates of Industrial Production (use-based classification)

<i>Sectors</i>	<i>1991–92 to 2000–01</i>	<i>2001–02 to 2009–10</i>	<i>1991–92 to 2009–10</i>
Basic goods	5.94	5.80	5.87
Capital goods	3.60	12.58	8.09
Intermediate goods	7.68	5.90	6.79
Consumer goods	5.65	8.01	6.83
Consumer durables	9.15	9.49	9.32
Consumer non-durables	4.77	7.64	6.21

See Annexure-I for further details.

Note: Authors calculations and derived from *Annexure-I*.

Industry-wise growth rates indicate distinct dissimilarities to a large extent in the post-liberalization period. Non-electric machinery, transport equipment and beverages and tobacco segment grew by over 10 per cent. Wool, silk and manmade fibre textiles, textile products and apparel, Paper, paper products and printing, basic chemicals and chemical products, Rubber, plastic, petroleum and coal products, non-metallic mineral products, basic metals and alloys, and other manufacturing industries growth rate was in the range of 5 to 10 per cent. Industries such as food products, cotton textiles, wood, wood products and furniture, leather and fur products and metal products grew in the range of 1 to 5 per cent. Only jute and other vegetable fibres showed negative to a very small extent (*See Table-9*). The weight of the high growth industries is 18.42 per cent of total weight of index of industrial production, whereas medium growth industries weight is 44.44 per cent and that of the low growth industries is 27.07 per cent (for yearly growth of each industries *see Annexure-II & -III*). Non-electrical machinery and machine tool industry and transport equipment industry grew at a rapid rate particularly during the period after year, 2002–03. (*Table-9*)

Table-9
Industry Growth Rates during Post-liberalization Period

<i>Industry Groups</i>	<i>1991-92 to 2000-01</i>	<i>2001-02 to 2009-10</i>	<i>1991-92 to 2009-10</i>
20-21. Food products	4.11	1.66	2.89
22. Beverages and tobacco	10.35	11.68	11.02
23. Cotton textiles	5.26	3.43	4.35
24. Wool, silk and man-made fibre textiles	10.70	4.22	7.46
25. Jute and other vegetable fibre textiles	1.25	-1.74	-0.25
26. Textile products and apparel	2.37	8.70	5.54
27. Wood and wood products and furniture	1.02	3.76	2.39
28. Paper, paper products and printing	6.64	5.80	6.22
29. Leather and fur products	4.42	0.87	2.65
30. Basic chemicals and chemical products	7.59	8.37	7.98
31. Rubber, plastic, petroleum and coal products	4.61	7.06	5.84
32. Non-metallic products	9.76	6.90	8.33
33. Basic metals and alloy industries	8.18	9.92	9.05
34. Metal products	3.75	4.88	4.32
35. Non-electric machinery and machine tools	7.21	13.39	10.30
36. Electric machinery and machine tools	-	-	-
37. Transport equipment	7.85	12.67	10.26
38. Other manufacturing industries	5.29	10.12	7.71

Source: Economic Survey 2010-11, Government of India.

6. Structural Changes in Manufacturing

In order to assess the structural changes during the post-reform period, the analysis of the characteristics of India's industries need to be examined. There are seven parameters on which it may be assessed. These are: 1) number of factories established; 2) investment in fixed capital; 3) invested capital; 4) number of workers employed; 5) value of output; 6) net value added; and 7) gross capital formation. All these selected variables are closely related to the structural characteristics of the industry. The main features can be seen from *Table-10*.

To assess the basic changes in the structure of Indian industries during the post-liberalization period, we have analyzed parameters such as: a) number of factories that have come up; b) gross value-added by industries; c) fixed capital; and d) number of workers in industries. Detailed data has been obtained from the Annual Survey of Industries of India (ASI) for the year 1991-92 to 2006-07.

Table-10
Principal Characteristics of Industries

<i>Industry Characteristics</i>	1991-92	1995-96	2000-01	2005-06	2007-08
No. of Factories	112,286	134,571	131,286	140,160	146,385
Fixed Capital (₹ Crore)	151,902	348,468	399,604	606,940	845,132
Invested Capital (₹ Crore)	221,234	489,969	571,799	901,579	1,280,126
Value of Output (₹ Crore)	299,196	670,514	926,902	1,908,355	2,775,709
Net Value added (₹ Crore)	54,827	139,397	143,621	311,684	481,593
Cross Capital Formation (₹ Crore)	38,445	90,624	61,415	171,567	262,299
No. of Workers	6,269,037	7,632,297	6,135,238	7,136,097	8,198,110
No. of Employees	8,193,590	10,044,697	7,917,810	9,038,523	10,378,495

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India, 2010.

The number of factories during 1991-92 to 2006-07 for the manufacturing sector as a whole increased by 30.37 per cent or 1.90 per cent per annum. The rate of increase in factories was impressive immediately after the post-reform period (1991-92 to 1995-96) which was 3.97 per cent per annum. This was mainly due to response to de-licensing of industries and also business optimism. The number of factories in existence declined during 1996-97 to 2000-01. This trend continued till 2002-03. This period witnessed restructuring of some industries, downward trend in the global economy and Asian financial crisis to name but a few. The downward trend got reversed thereafter. The rise in the number of factories during 2000-01 to 2006-07 was 11.50 per cent. During the post reform period large number of factories came up in apparel and dyeing of fur (86.22%), paper and paper products (83.23%), rubber and plastic products (71.69%), motor vehicles (65.28%), furniture (62.98%) and coke and petroleum (61.91%). There has been decline in the number of factories in tobacco products (-61.13%), office, accounting and computing machinery (-26.25%), radio, T.V. and communication equipment (-19.43%), and wood and wood products (-0.93%). [For details see *Table-11* and also *Annexure-IV*]. Factories in the capital-intensive industries have gone up by 37.77 per cent and whereas in labour intensive it has increased by 28.23 per cent. This fact indicates that industry structural change is moving towards capital intensity.

Data on fixed capital at current prices are available from ASI for the year 1991-92 to 2006-07 which has been converted into constant prices using the index of machinery and machine tools (Economic Survey 2010-11). The values are converted into 1993-94 prices. This provides better indication. The fixed capital in manufacturing increased by 19.36 per cent over the period 1991-92 to 2006-07. This increase was faster in the initial years (1991-92 to 1995-96) of economic reform and in the vicinity of 20 per annum. This trend could not to be sustained in the subsequent two phases. In the second phase (1996-97 to 2000-01) and third phase (2001-02 to 2006-07), it grew by 7.91 and 7.22 per cent respectively. This was largely due to the downturn both the Indian economy and the global economy. Further, the

process of economic reform slowed down. We witness relative rise from 2004–05 onwards. An increase in fixed capital differed vastly from industry to industry. For instance, apparel and dyeing of fur (64.41%) and coke and petroleum products (54.70%) have high rate of growth in fixed capital; similarly in publishing and printing (32.00%), and motor vehicles (31.75%) but to a lesser extent. In general, the rise in fixed capital was higher in case of labour-intensive industries (see Table-12).

Table-11
Increase or Decrease in Factories 1991–92 to 2006–07 (in percentages)

<i>Industries</i>	<i>Increase or decrease</i>	<i>Industries</i>	<i>Increase or decrease</i>
15. Food products and beverages	29.64	16. Tobacco products	-61.13
17. Textiles	50.89	18. Apparel and dyeing fur	86.22
19. leather products and tanning	31.87	20. Wood and wood products	-0.93
21. paper and paper products	83.23	22. Publishing and printing	9.80
23. Coke and petroleum products	61.91	24. Chemicals and chemical products	44.92
25. Rubber and plastic products	71.69	26. Non-metallic minerals	52.08
27. Basic metals	27.85	28. Fabricated metals products	38.39
29. Machinery and equipment	11.49	30. Office, accounting and computing machinery	-26.25
31. Electric machinery and apparatus	34.96	32. Radio, T.V. and commn equip	-19.43
33. Medical, optical instruments, watches, etc.,	16.72	34. Motor vehicles and trailers	65.28
35. Transport equipment	0.11	36. Furniture	62.98

Source: Economic Survey 2010-11, Government of India.

Table-12
Rise in the Growth Rate of Fixed Capital Per Annum 1991–92 to 2006–07 (per cent)

<i>Industries</i>	<i>Rise in fixed capital</i>	<i>Industries</i>	<i>Rise in fixed capital</i>
15. Food and beverages	22.00	16. Tobacco products	22.68
17. Textiles	26.77	18. Apparel and dyeing fur	64.41
19. Leather products & tanning	11.79	20. wood and wood products	24.39
21. Paper and paper products	15.96	22. Publishing and printing	32.00
23. Coke & petroleum products	54.70	24. Chemicals & Chemical products	17.73
25. Rubber and plastic products	21.71	26. Non-metallic minerals	15.92
27. Basic metals	12.42	28. Fabricated metals	28.63
29. Machinery and equipment	12.87	30. Office, accounting and computing machinery	23.47
31. Electric machinery & apparatus	13.00	32. Radio, T.V. and commn equip	16.22
33. Medical, optical instrument, watches etc.	7.52	34. Motor vehicles and trailers	31.75
35. Transport equipment	12.05	36. Furniture	13.43

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India, 2010.

The gross value added (GVA) for 1991–92 to 2006–07 has been converted into constant prices of 1993-94 by using the index of manufacturing product prices (RBI index). During 1991–92 to 2006–07, GVA in the manufacturing sector increased by 16.97 per cent per annum. In the second phase (1996–97 to 2000–01) the GVA growth rate declined to 1.90 per cent and in the subsequent period (2001–02 to 2006–07), the growth rate was restored to 16.75 per cent per annum. It may be interesting to observe industry-wise growth in GVA. The growth rate of GVA has been impressive in case of coke and petroleum products (74.88 % per annum), furniture (44.22%), basic metals (30.19%), and motor vehicles and trailers (24.68%). Whereas it has been low in case of wood and wood products (3.56%), radio, T.V. and communication equipment (4.79%) and office, accounting and computing machinery (5.68%). The GVA growth rate was in the range of 10 to 20 per cent per annum in other industries. For details see *Table-13*.

Table-13
Growth of GVA Per Annum 1991–92 to 2006–07 (per cent)

<i>Industries</i>	<i>Growth rate of GVA</i>	<i>Industries</i>	<i>Growth rate of GVA</i>
15. Food and beverages	13.79	16. Tobacco products	10.46
17. Textiles	7.70	18. Apparel and dyeing fur	18.95
19. Leather products and tanning	7.02	20. wood and wood products	3.56
21. Paper and paper products	6.71	22. Publishing and printing	11.45
23. Coke and petroleum products	74.88	24. Chemicals and Chemical products	14.50
25. Rubber and plastic products	9.49	26. Non-metallic minerals	11.80
27. Basic metals	30.19	28. Fabricated metals	18.61
29. Machinery and equipment	11.48	30. Office, accounting and computing machinery	5.68
31. Electric machinery and apparatus	14.60	32. Radio, T.V. and communication equipment	4.79
33. Medical, optical instrument, watches etc.	15.85	34. Motor vehicles and trailers	24.68
35. Transport equipment	14.02	36. Furniture	44.26

Source: Based on NSO data authored calculation.

The growth rates of GVA had a significant impact on share of industries in total manufacturing GVA. The share of different industries also altered during the reform period. The shares of all labour-intensive industries in total manufacturing GVA declined more or less continuously over 1991–92 to 2006–07 (*see Annexure-V*). Steep decline can be seen in the case of textiles and paper and paper products. Among the capital-intensive industries share of GVA increased sharply with respect to coke and petroleum products,

motor vehicles and trailers and basic metals. To indicate the changes in the shares various industries the whole reform period has been divided into three phases (see Table-14). The share of labour-intensive industries has declined in total manufacturing GVA over the period from 1991–92 to 1995–96 period to 2001–02 to 2006–07 from 29.27 per cent to 23.84 per cent. And in the same period capital-intensive industries GVA has increased from 70.73 per cent to 78.65 per cent. This also proves that industrialization is moving towards capital- intensive industries.

Table-14
Share of GVA of Industries in Total Manufacturing GVA (per cent)

<i>Industries</i>	<i>Phase I (1991–92 to 1995–96)</i>	<i>Phase II (1996–97 to 2000–01)</i>	<i>Phase III (2001–02 to 2006–07)</i>
15. Food products & beverages	9.69	10.61	8.79
16. Tobacco products	1.67	1.95	1.93
17. Textiles	10.68	9.38	7.25
18. Apparel & dyeing fur	2.03	1.89	1.74
19. Leather products & tanning	0.99	0.84	0.74
20. Wood & wood products	0.33	0.27	0.26
21. Paper & paper products	2.15	1.83	1.72
22. Publishing & printing	1.73	1.48	1.41
23. Coke & petroleum products	4.82	4.16	11.00
24. Chemicals & chemical products	18.43	21.03	17.53
25. Rubber & plastic products	3.05	3.53	3.10
26. Non-metallic minerals	5.27	4.85	5.02
27. Basic metals	12.01	12.69	14.26
28. Fabricated metals	2.80	2.67	2.68
29. Machinery & equipment	6.68	6.51	5.47
30. Office, accounting & computing machinery	0.89	0.48	0.67
31. Electric machinery & apparatus	4.83	4.07	3.61
32. Radio, T.V. & communication equipment	2.52	2.27	1.89
33. Medical, optical instrument & watches etc.,	0.82	0.87	0.94
34. Motor vehicles & trailers	4.47	5.05	6.05
35. Transport equipment	3.32	2.76	3.03
36. Furniture	0.99	1.33	1.40

Source: Based on NSO data authored calculation.

The number of workers in the manufacturing sector as a whole increased by 2.47 per cent per annum during 1991–92 to 2006–07. During the initial years of economic reform (1991–92 to 1995–96) the rise in the workers in the manufacturing sector was 3.93 per cent per annum, during the second phase (1996–97 to 2000–01) it was negative by -1.57 per cent. However, in the subsequent period (2001–02 to 2006–07) it increased by 5.33 per cent per annum. The rise in the number of workers was impressive in apparel and fur (22.61%), and furniture (16.91%). A modest rise was registered in rubber and plastic products (6.33%), motor vehicles and trailer (7.27%), and fabricated metals (6.19%) during the reform period (For details *see Table-15*). The rise in the workers was higher in capital intensive-industries than in the labour-intensive industries. This is on account of expansion of capital-intensive industries.

Table-15
Rise or Fall in the Growth of Workers 1991–92 to 2006–07 Per Annum (per cent)

<i>Industries</i>	<i>Rise or fall</i>	<i>Industries</i>	<i>Rise or fall</i>
15. Food and beverages	1.89	16. Tobacco products	-0.23
17. Textiles	1.57	18. Apparel and dyeing fur	22.61
19. Leather products and tanning	3.77	20. wood and wood products	0.20
21. Paper and paper products	2.05	22. Publishing and printing	-0.87
23. Coke and petroleum products	3.86	24. Chemicals and Chemical products	2.39
25. Rubber and plastic products	6.33	26. Non-metallic minerals	3.03
27. Basic metals	1.99	28. Fabricated metals	6.19
29. Machinery and equipment	1.25	30. Office, accounting and computing machinery	1.04
31. Electric machinery and apparatus	2.14	32. Radio, T.V. and communication equipment	-0.02
33. Medical, optical instrument, watches etc.	3.35	34. Motor vehicles and trailers	7.27
35. Transport equipment	-1.66	36. Furniture	16.91

Source: Based on NSO data authored calculation.

Increase in the fixed capital growth rate has been higher than GVA growth rate in most of the industries during the reform period. However, the exceptions are coke and petroleum products, basic metals, electric machinery and apparatus, medical, optical instrument and watches, transport equipment and furniture. All these product groups are capital-intensive industries. This may be due to technological changes in these industries which enhanced the productivity per worker. The rise in the growth of fixed capital is higher than the rise in work force in all industries except furniture. And finally, the rise in the GVA is higher in all industries over the work force rise except in case of apparel and dyeing of fur. This clearly explains the capital intensity in the industry is growing at a faster rate. The output is becoming increasingly capital-intensive including

that of labour-intensive industries. The labour productivity is also on the rise with increased amount of capital per worker.

Gross value added per unit of capital declined in most of the industries during the period 1991–92 to 2006–07, except in the case of coke and petroleum products, basic metals, electric machinery and apparatus, medical, optical instrument and watches and transport equipment. The gross added per unit of fixed capital declined sharply in the case of wood and wood products (-68.02%), apparel and fur (-64.34%), office, accounting and computing machinery (-59.85%), textiles (-57.75%), publishing and printing (-53.75%), and radio, T.V. and communication equipment (50.90%). All labour-intensive industries experienced steep fall in GVA per unit of fixed capital (*see Table-16* and for details see

Table-16
GVA Per Unit of Fixed Capital, GVA Per Worker and
Fixed Capital Per Worker 1991–92 to 2006–07 (per cent)

<i>Industry</i>	<i>GVA per unit of fixed capital</i>	<i>GVA per worker</i>	<i>Fixed capital per worker</i>
15. Food products and beverages	-29.11	145.99	246.93
16. Tobacco products	-42.23	177.56	380.00
17. Textiles	-57.75	78.48	322.29
18. Apparel and dyeing fur	-64.34	-12.73	145.11
19. Leather products and tanning	-26.45	32.36	80.21
20. wood and wood products	-68.02	52.22	374.69
21. Paper and paper products	-41.60	56.01	167.50
22. Publishing and printing	-53.75	228.80	610.88
23. Coke and petroleum products	33.21	702.61	503.18
24. Chemical and chemical products	-13.48	140.15	177.48
25. Rubber and plastic products	-43.79	25.23	122.36
26. Non-metallic minerals	-18.54	94.66	139.04
27. Basic metals	95.28	342.41	126.62
28. Fabricated metal products	-28.69	99.92	180.40
29. Machinery and equipment	-7.35	136.38	154.88
30. Office, accounting & computing machinery	-59.85	63.51	307.47
31. Electric machinery & apparatus	8.25	148.49	129.39
32. Radio, T.V. & commn equipment	-50.90	77.10	260.65
33. Medical, optical instruments & watches etc.	60.47	130.10	43.39
34. Motor vehicles and trailers	-18.70	129.69	181.02
35. Transport equipment	43.12	355.62	298.86
36. Furniture	-39.89	117.85	262.11
Total manufacturing	-9.24	136.20	193.64

Source: Based on NSO data authored calculation.

Annexure-V). It provides the yearly variations in each industry about GVA per unit of fixed capital. For the total manufacturing sector as a whole decline in GVA per unit of fixed capital was -9.24 per cent per annum during 1991–92 to 2006–07. The decline was sharp from 1991–92 to 1998–99 to the extent of 4.92 per cent per annum, thereafter GVA per unit of fixed capital increased by 5.49 per cent per annum. In the later years GVA per unit of fixed capital improved (*see Annexure-V*). This may be due to increased utilization of capital.

The gross value added per worker increased in all industries except in the case of apparel and dyeing of fur during the reform period. Among the labour-intensive industries, GVA per worker is highest in publishing and printing, tobacco products and food products and beverages; the lowest is in leather and leather products. Among the capital-intensive industries, the GVA per worker is high in the case of coke and petroleum products, transport equipment, and basic metals. However, it is low in the case of rubber and plastic products, office, accounting and computing machinery and radio, T.V. and communication equipment. For total manufacturing as a whole, GVA per worker increased by 136.20 per cent from 1991–92 to 2006–07 (*see Table-16, col. 2; also see Annexure-VI*). Similarly, fixed capital per worker increased in all industries, the highest being publishing and printing, coke and petroleum products, tobacco products, wood and wood products and textiles. The capital worker increased rapidly in case of labour-intensive industries. This fact again emphasised the point the capital-intensity is increasing more in labour-intensive industries. More capital is substituted for labour (*see Annexure-VII*)

7. Productivity Trends

The productivity growth in the post-reform period of 1990s declined from growth rate witnessed in the 1980s²¹. This was a puzzle as the reform process was expected to accelerate productivity growth. Many studies made attempts to provide an explanation to this outcome of the reform process. Some experts have viewed that a fall in capacity utilization was responsible for this phenomena. They argued that due to surge in investment activities and high imports in post-reform period which was not accompanied by commensurate rise in demand and capacity utilization in industry. This in turn adversely affected productivity growth. Golder and Anita Kumari (2003) provide

²¹ Trivedi, P., A. Prakash and D. Sinate (2000), "Productivity in Major Manufacturing Industries in India: 1973-74 to 1997-98," Development Research Group Study No. 20, Department of Economic Analysis, Reserve Bank of India, Mumbai. See also, B. Golder and Anita Kumari (2003), "Import Liberalisation and Productivity Growth in Indian Manufacturing in the 1990s," *Developing Economies*, Vol. 41, No. 4, Pp. 436-60.

evidence to this fact. Virmani (2009)²² indicates that the pattern of productivity growth at macro level resulting from the 1990s reform was in line with prediction of the J-curve hypothesis. This conclusion was supported by Hashim²³. The study by Virmani and Hashim (2009)²⁴ uses ASI data from 1981–82 to 2007–08 with a view to trace the changing impacts of reforms on productivity and growth. For the purpose of analysis the period has been divided into two periods: the pre-reform period from 1981–82 to 1990–91 (period I) and post-reform period 1991–92 to 2007–08 (period II). Further, the post-reform period has been divided into three sub-periods: sub period 1 (1991–92 to 1997–98), sub-period 2 (1998–99 to 2001–02); and sub-period 3 (2002–03 to 2007–08). We have taken only the post-reform period analysis. The total factor productivity growth (TFPG) growth may be seen in *Table-17*.

The TFP grew at 0.6 per cent per annum in the 1980s and slowed down to 0.25 per cent per annum during sub-period 1, and, in sub-period 2, it further declined to -0.09 per cent per annum. In sub-period 3, the TFP growth picked up to 1.41 per cent per annum. Immediately after the post-reform period, the reform effect was negative on productivity and output growth. This was due to effects BOP shock, dramatic import liberalization, diversion of firms resources, learning new skills and technologies. It was also coupled with the introduction of new capital goods resulting in negative effects on productivity and growth for the prolonged period. The slow-down accentuated during the second sub-period. This would yield initial J-curve portion. The dissemination of new technologies and product adoption the capacity got adjusted appropriately. Therefore, TFPG got accelerated sharply during sub-period 3. For the manufacturing sector as a whole, TFP gain during the post-reform period has been 0.58 per annum (*see Table-17*). The economy completed the rising portion of the J-curve by 2007–08 and entered the upper portion of the S-curve thereafter. The authors come to the conclusion that TFPG in manufacturing sector has followed J-curve pattern. The J-curve is linked to obsolescence of capital and technology embodied in them.

²² Virmani, Arvind (2009), *The Sudoku of India's Growth*, BS Books, Business Standard Publications, New Delhi.

²³ Hashim, Danish A., Ajay Kumar and Arvind Virmani (2009), "Impact of Major Liberalization on Productivity: The J Curve Hypothesis," Working Paper No. 5/2009, DEA, Ministry of Finance, Government of India.

²⁴ Virmani, Arvind and Danish A. Hashim (2011), "J-curve Productivity and Growth: Indian Manufacturing Post-Liberalization," IMF Working Paper, WP/11/163.

Table-17**Total Factor Productivity (TFP) Growth in Indian Manufacturing Sectors (per cent)**

<i>Period</i>	<i>Sub-period 1, 1991-92/ 1997-98</i>	<i>Sub-period 2, 1998-99/ 2001-02</i>	<i>Sub-period 3, 2002-03/ 2007-08</i>	<i>1991-92/ 2007-08</i>
15. Food products & beverages	-0.56	-0.24	0.95	0.05
16. Tobacco products	0.54	-1.55	-1.14	-0.54
17. Textiles	0.49	1.20	1.78	1.12
18. Apparel & dyeing fur	-0.78	1.11	1.71	0.55
19. Leather products & tanning	1.31	-0.08	1.08	0.90
20. Wood & wood products	-10.03	1.13	1.13	-3.46
21. Paper & paper products	-1.30	0.32	1.86	0.20
22. Publishing & printing	-2.12	-4.62	3.12	-0.86
23. Coke & petroleum products	-3.99	-0.47	2.39	0.91
24. Chemicals & chemical products	-1.25	-0.33	1.71	0.01
25. Rubber & plastic products	0.16	0.92	0.07	0.31
26. Non-metallic mineral products	0.29	1.69	1.18	0.93
27. Basic metals	2.99	-1.04	-0.74	0.73
28. Fabricated metals	0.25	-0.09	1.41	0.58
29. Machinery & equipment	1.77	1.00	0.75	1.23
30. Office, accounting & computing machinery	3.89	-0.48	-1.62	0.92
31. Electric machinery & apparatus	3.10	-0.05	2.84	2.27
32. Radio, T.V. & Commn equipment	0.84	-1.58	0.48	0.15
33. Medical, optical instrument & watches etc.	-0.86	-0.81	2.17	0.22
34. Motor vehicles & trailers	1.09	-2.27	4.02	1.33
35. Transport equipment	1.68	1.72	2.75	2.07
36. Furniture	2.80	-0.68	1.98	1.69
Others total	-0.05	-0.24	1.60	0.49
All manufactures	0.25	-0.09	1.41	0.58

Source: Virmani, Arvind and Danish A. Hashim (2011), "J-Curve of Productivity and Growth: Indian Manufacturing Post-liberalization," IMF Working paper 11/163, July 1.

Trends in the productivity growth at sub-sector level of manufacturing showed much more varied pattern of productivity growth than at aggregate level. TFPG was more than 1 per cent per annum for six industries, namely electric machinery and apparatus, transport equipment, furniture, motor vehicles and trailers, machinery and equipment and textiles (*see Table-19*). Other industries experienced positive growth in TFP except wood and wood products, publishing and printing and tobacco products. Differences in productivity growth due to different policy reforms affect different industries to a different degree. The authors comes to the conclusion that of the 22 two-digit level industries of manufacturing for which the TFPG worked out, 3 followed S-curve pattern, 8 followed J-curve pattern and ten followed a hybrid of S-J pattern. One industry followed the pattern of falling productivity. The reforms did help the productivity and

output to grow. But it may not be high enough in all industries due to halting reforms, technological gap and rigid labour legislations and many other factors.

8. Role of Public Sector

The sustained growth of public enterprises in India dates from the early years of planning following independence. The 1956 Industrial Policy Resolution affirmed the objectives of a socialistic pattern of society and concomitant need for planned and rapid industrial development to achieve this objective. It proposed that all basic and strategic industries and public utilities should be located in the public sector. Public ownership, part or complete, was required in those fields where technological considerations fostered the concentration of economic power and wealth. Public enterprises thus came to establish their dominance in basic and strategic industries such as steel, minerals, metals, coal, power, petroleum, chemicals, fertilizers, pharmaceuticals, heavy engineering and substantial presence in industries such as transportation services, agricultural-based products, trading and marketing and financial services.

The number and activities of the public sector grew rapidly during the Five-year Plan period. Under the Central Government, there were only 5 enterprises in 1951 and it grew to 249²⁵ by the end of March 2009. The public sector provided employment to 1.49 million persons in the same year. The investment in the public sector also grew at the same time. It is evident from the *Table-18*.

Table-18
Number of Enterprise and Total Investment in Public Sector (in crores)

<i>Year</i>	<i>Number of Enterprises</i>	<i>Total Investment</i>
1951	5	29
1961	47	948
1969	84	3,897
1980	179	18,150
1990	244	99,329
2002	240	324,614
2007	247	421,089
2010	249	579,920

Source: Bureau of Public Enterprises, Public Enterprise Survey, Ministry of Industry, Government of India, New Delhi, 2010.

Out of 249 enterprises 84 were manufacturing, 87 services, 19 mining and 3 agriculture. Rest were under various stages of development. The public sector were spread to all

²⁵ Out of 249 enterprises, 217 were operating and 32 were yet commence operation.

parts of India. Its coverage extended to basic and heavy industries into light manufacturing, a variety of consumer goods, electronics, high technology products, construction, consulting services, tourism and hotel industries. Currently, it accounts for over 21.8 per cent of manufacturing GDP and its growth has been 8.6 per cent in 2009-10. It's share is around 6 per cent of total employment in the organized sector and over 20 per cent of direct and indirect tax collections (for details *see Table-19*). The public sector share in fixed capital is 34 per cent in 2009-10. Until mid-80s the share of public sector in gross fixed capital formation was the largest and gradually it diversified into consumer goods also. The public sector enterprises suffered huge losses till the mid-1970s and it turned around thereafter. With market-oriented reforms since the early 1990s the role of the public sector was diluted. The public sector growth has slowdown in 1990s, indicating significant pressures of privatization on the public sector enterprises. The competitive pressures from the private sector and also from imports affected the operations of the public sector. The role of public sector may likely to be reduced in the coming years. There has been privatization of some public sector units in the decade of 2000.

Table-19
Public sector Participation in Manufacturing

<i>Years</i>	<i>Share of Public sector in Manufacturing GDP (in %) at current price</i>	<i>Public sector GDP Growth (in %)</i>
1960s	5.62	26.68
1970s	10.75	18.32
1980s	16.60	19.25
1990s	16.95	9.98
1993-97	16.43	12.29
1997-2000	14.65	7.01
2009-10	21.81	8.62

Note: For decades in averages.

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India, Various years.

The changing policy regime has led to a sharp fall in the share of public sector in manufacturing during the last decade. Over the last six decades, the public sector manufacturing enterprises witnessed its fortune swing with the policy regimes. The public sector share in manufacturing output went up till 1990 and declined sharply thereafter. There have been disinvestment in a few public enterprises but they are not widespread. Over the last six decades, the growth and decline of public manufacturing sector has made significant contribution in the structural changes of the Indian manufacturing sector

9. Conclusions

The importance of industrialization as a means of achieving rapid growth has long been recognized as a development strategy in India. Industrial policy—as it evolved after independence through various Five Year Plans and industrial Policy Resolutions—has reflected the objectives. It is indeed difficult to assess the performance of the broad objectives of industrialization over the past six-decades and relate them to the structural changes that have occurred during this period. There were some policy changes and they were significant in bringing about structural changes in the industrial sector over the years. There has been substantial widening of the industrial base and consequent ability to produce a very broad range of industrial products. Other positive aspects of industrialization include the fostering of entrepreneurship and development of technological capabilities and skills in the economy. At the institutional level, the development of the public sector is a major step to begin within the framework the mixed economy philosophy. With the initiation of economic reform in 1991, the private sector gained importance. An emphasis on public sector investment led to the establishment of heavy industries in the public sector. This policy was coupled with import substitution in a large range of industries. This in effect contributed to the widening of industrial base of the economy. However, the fact is that the potential has not been fully exploited and the rate of growth of industrial sector has been disappointing even during the post-reform period.

The growth rate of the industry has consistently fallen far short of the targets laid down in the successive plans. In the first three Five Year Plans the target growth rates for the industry were set approximately at 7 per cent, 10.5 per cent and 10.75 per cent per annum respectively²⁶. The rates of growth realized over the corresponding plan periods were 6 per cent, 7.25 per cent and 8 per cent per annum respectively. However, this performance was not too bad in itself as compared to subsequent plans. Industrial growth thereafter was not only short of the targets, but also much lower than the earlier period. The target of industrial growth was at 12 per cent per annum in the 4th Five Year Plan period (1968–69 to 1973–74), the target was lower in subsequent plans. The Fifth and Sixth Plans aimed for industrial growth at 8 per cent per annum. Actual growth in the industry between 1968–69 and 1982–83 was of the order of 4.8 per cent per annum. Throughout this period while capacities were set up in the wide-range of industries, the potential offered by the diversified industrial base has not been exploited.²⁷

²⁶ Raj, K.N. (1976), "Growth and Stagnation in Indian Industrial Development," *Economic and Political Weekly*, November 26

²⁷ Ahluwalia, Isher Judge (1985), *Industrial Growth in India: Stagnation since the Mid-Sixties*, Oxford contd...

It is important to know that within manufacturing, the organized or registered sector recorded a faster rate of growth than the unorganized sector. The former was also the sector which was affected more by the slow-down after the mid-sixties. In spite of this slow-down, the share of the organized sector in the total value added in manufacturing increased from 56 per cent in 1956–57 to 64 per cent in 1981–82. It is a fact that there has been considerable deterioration in the growth performance of industries after the mid-sixties. However, several hypotheses have been put forward to explain the slow-down in industrial growth after the mid-sixties. Different analysts have emphasised different factors as being the prime mover in the process of growth. Some view that the drag emanated mainly from the agricultural sector through its demand-supply linkages with the industrial sector. There were others opine that major blame to a worsening of the distribution of income in the economy over a period of time and the lack of broad-based demand for industrial products. A few ascribe the slow-down in industrial growth to slowing of public investment after the mid-sixties.

The industrial stagnation has been associated with poor performance of productivity growth. The industrial policy basically included: 1) enhancing production and productivity, particularly in priority sectors; 2) encouraging small scale sector with a view to generating employment; 3) bringing about regionally balanced industrial development; 4) preventing concentration of economic power by controlling monopolies; and 5) controlling foreign investments in domestic industries. The objectives are to be achieved within the framework of government regulations. Further, the public sector will play a dominant role and the private sector was expected to play a complementary role in the framework of mixed economy. The policy instruments deployed were: a) industrial licensing; b) import licensing; c) price controls; and d) restrictions on foreign investment and import of technology. These instruments failed to meet the set objectives and goals. In fact, they become obstacles to output growth, rise in productivity, increase in employment, efficiency, competitiveness and rise of new entrepreneurial class. Public investment failed to meet the set objectives.

Many features of the policy regime have contributed to the lack of dynamism in the industry. The operational system could be characterised by undue administrative delay with sequential clearances. The proliferation of administrative conditions imposed on licensee in the process of granting license. Administrative restrictions were imposed in a highly ad-hoc fashion. All this led to rise in project costs and costs of production. The system did not give any consideration to efficiency. On the whole, the system of controls has focussed more on the regulatory rather than developmental aspects of industries. The

system created barriers to entry into individual industries. This eluded competitive elements in the market. The system has been manipulated to ensure that potential entrants are kept away. There are many examples to testify this fact. The practice led to short falls in capacity creation relative to planned targets. The absence of foreign competition and indefinite nature of protection granted to industries created inefficiency on a large scale. The protection offered to the capital goods and intermediate goods industries had the effect of raising the costs across the industrial sector. More importantly, the restrictions of imports through import licensing amounted to an open-ended protection from the foreign competition. There was no incentive for reducing costs and improving quality. This led to development of industrial structure which is highly inefficient.

The reservation for small industries is yet another obstacle to industrial growth. Besides reservation, there are substantial financial and fiscal incentives provided to small scale enterprises. These incentives tended to result in a strong resistance of small units towards medium-sized growth in the normal course, and in the fragmentation of big ones into small. This policy also helped the units to achieve economies of scale. There have also been barriers to exit. The firms were not allowed to die; it could be passed on as a sick unit to the care of the government. This encouraged inefficiency. The uncertainties rooted in industrial policies discouraged long-term planning on part of the industry. The administrative limitations created strong incentives for 'rent-seeking' than creative productive activity. The built-in biases of the system towards regulation rather than development crippled the growth. The industrial licensing instruments were also used to check the expansion of industries in the name of controlling the concentration of wealth.

The restrictive policy towards imports of technology denied access to latest technology. This is combined with little recognition of the need for technological innovation, led widening technological gap in India relative to the rest of the world. This in turn not only reduced the competitiveness of exports, but also led to inefficient use of raw materials, with its wide-ranging impact on the cost-structure of the industry. The open-ended import-substitution policy curtailed domestic competition and depressed industrial growth. The fact of the matter is that with the passage of time, the policy became more regulatory and less developmental, thus belying the promise for growth in desired directions. These industrial policies did not allow much alteration in industrial structure of the economy. Therefore, the whole period of mid-sixties to till the end of 1970s is aptly called the years of stagnation in Indian industries. With the advent of 1980s, the industrial policy began to change.

The overall impact of industrial policy framework did impair the growth of productivity or efficiency in the use of factors, and retarded industrial growth. The contribution of the

total factor productivity growth was negligible or negative in most industrial groups. The reforms in industrial policy framework have been hesitant and far short of what was required, even though the need for an overall review of the industrial policy framework has been recognized. The change in the policy was halting and too slow. From the mid-sixties to the end of seventies, there were hardly structural changes in the industrial sector.

From 1980 onwards the industrial policy witnessed greater pragmatism with gradual relaxation of controls and increased willingness to import technology and foreign capital to modernize manufacturing sector. The policy framework included stepping up of public investment in infrastructure and energy production. The second oil shock was successfully met by enhancing domestic oil production and by import substitution in fertilizers. The second of the 1980s witnessed considerable de-licensing and relaxation of import controls to upgrade industrial technology. There was increased reliance on the private sector. In the 1980s, many segments of the manufacturing such as automotive industry, cement, cotton spinning, food processing, polyester filament yarn and several others witnessed modernization and expansion of scales of production. Industrial export growth increased in the second half of 1980s as import restrictions moved from the quantitative restrictions to tariffs. The turnaround in industrial output growth in the 1980s has been attributed to the liberalization, increased public investment and better public sector performance²⁸.

The 1990s witnessed rapid economic reform, particularly industry and trade reform accelerated, while public investment contracted sharply. The pattern of industrial financing changed for the better with financial sector reforms. However, there was no change in the industrial labour laws. There were signals to the employers that the government would not come in the way of restructuring industries, layoffs and retrenchment of organized workers. The pace of reform was gradual.

The industrial growth dipped in 1991–92 due to crisis and adjustment problems. Thereafter it boomed for four years, peaking in 1995–96. Due to a variety of reasons, the boom petered out and it lasted for seven years until 2003–04. The acceleration which began in 2003–04 lasted for five years up to 2007–08. The financial crisis and world-wide recession gave a jolt to industrial growth. The average annual growth during the 17 years of reform (1991–92 to 2007–08) has been 6.6 per cent. In this period, the consumer durable goods grew faster with 8.1 per cent per year. In spite of dismantling of ‘licensing Raj’,

²⁸ Nagaraj, R. (1990), “Industrial Growth: Further Evidence and Towards an Explanation and Issues,” *Economic and Political Weekly*, Vol. 15, No. 41, February, Annual number.

industrial growth has not accelerated. The growth rates in the labour-intensive industries have not increased. There has been no de-industrialization either. The share of industrial employment and output in total has not declined. The structural transformation of workforce has continued at the same pace after the reforms. Measured by investment, the reforms were not a setback for industrialization. The manufacturing sectors share has gone up from 27 per cent in the 1980s to about 40 per cent in the decade of 2000. Other positive factor is that of improvement in Indian industries competitiveness. India possessed competitiveness in 71 products in 1962 and it has gone up to 254 products in 2007—majority of which belong to chemicals, metals and machinery manufacturing²⁹. India's exports are mostly restricted to skill and technology-intensive products, implying that while India has the potential to export a much wider range of products but does not export them. This is precisely because it lacks complementary components such as adequate infrastructure, export credit and macroeconomic policy environment³⁰.

There are some adverse factors too. Among them is the shrinkage in employment. Das³¹ in his study finds that during one and a half decades of economic liberalization and trade openness the relative importance of Labour-intensive industries in output has gone down. There has been a continuous decline in labour-intensity across all labour-intensive industries. From 1990-91 to 2003-04 labour-intensity ratio in labour-intensive industries has gone down from 0.72 to 0.30. The labour-intensity also declined in capital intensive industries as well in the post-reform period. This decline in organized manufacturing sector could be due to import liberalization in early 1990s and thereafter. This provided access to capital and new technologies to Indian enterprises. These new technologies were labour-saving in nature. Many labour-saving industries registered positive output growth. However, this growth could not commensurate with employment growth thereby resulting in low employment elasticity in labour-intensive industries.

Indian manufacturing sector has not performed well as some other large emerging economies. A series of structural distortions did depress the performance of manufacturing. Many distortions exists at multiple levels and reflect long standing problems with reallocation of labour across sectors, excessively small scale of firms, low

²⁹ Felipe, Jesus, Utsav Kumar and Arnelyn Abdon (forthcoming): "Export Capabilities, and Industrial Policies in India", *Comparative Economics*.

³⁰ Nagaraj, R. (2012), "Trends and Patterns in Industrial Growth: A Review of Evidence and Explanation, Paper prepared for the volume on "Indian Industrialization (ed) C.P. Chandrasekhar, ICSSR, New Delhi

³¹ Das, Deb Kusum, Deepika Wadhwa, and Gunjit Kalita (2009) " Employment Potential of Labour-intensive Industries in India's Organized Manufacturing", ICRIER, Working paper No. 236

firm turnover, poor market integration, high concentration and persistent state ownership. These phenomena represent severe restraints on the level and growth of productivity in manufacturing. Why India's manufacturing sector has not been more dynamic? It is because of the anti-competitive regulations which deter firms' expansion and entry of new firms. Many experts view that distorted investment reduced growth and employment creation. The enterprises opine that the labour regulations and restrictive exist policy were the main obstacles to growth.

Industrial scenario represents a broad picture of continuity and change. However, there are some causes for concern. There is no sign of de-industrialization but manufacturing sector share stagnated and its export share has declined in recent years. The manufacturing sectors share in total employment did stagnate. It represents the failure of the reform to promote labour-intensive manufacturing in spite of doing away with the import substitution bias in industrial policy. The growing capital-intensity of production, largely explains the employment stagnation. Now, it has become much easier to import labour-saving equipment with low tariffs. The other reasons may be increasing sub-contracting or out sourcing of segments of manufacture and auxiliary services to unorganized sector, and forging a close-supply chain network. The reforms brought increased competitive pressure; with lax enforcement of labour laws the firms have restructured their production process by shedding labour³². This represents an outcome of the changing market conditions and organization of production. What emerges from this industrial change is that India has managed to avert de-industrialization but its output growth has not accelerated. The manufacturing sector share in GDP has stagnated and share of manufactured goods has declined. This is the weakness of domestic capabilities. Yet sustained growth in output, exports and rising share of fixed investment indicates that reforms have not adversely affected the industrialization prospect. At the outset it appears that the manufacturing output growth in the post reform period has been input driven. On an average about 15 per cent of output growth can be achieved by improving firms' efficiency without having to increase any inputs³³.

The other structural changes that have occurred are effective competition in the domestic market, easy entry of new firms and emergence of buyers market in industrial products, improved quality and variety of products. The technology-intensity has increased particularly during the post-liberalization period. These changes have occurred slowly in

³² Nagaraj, R. (2011), "Industrial Performance, 1991-2008: A Review" in D.M. Nachane (Ed.) *India Development Report 2011*, Chapter 6, Indira Gandhi Institute of Development Research, Oxford University Press, New Delhi.

³³ Kalirajan, K. and S. Bhide (2005), "The Post-Reform Performance of Manufacturing Sector in India", *Asian Economic Papers*, Vol. 3 (2).

the manufacturing sector and will intensify in future. The glaring fact is the increasing capital-intensity even in the case of labour-intensive industries. With this scenario, it appears that job creation is not going to be easy in the manufacturing sector. The expansion of manufacturing sector may lead to increased capital-intensity but relatively less use of labour in the process of production. Over the last six decades, changes have occurred in quantity and quality of industrial output. However, it is difficult to say whether it is substantial or not in definite terms.

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Annexure-I

Annual Growth Rates of Industrial Production (use-based classification)

<i>Year</i>	<i>Basic goods</i>	<i>Capital goods</i>	<i>Inter-mediate goods</i>	<i>Consumer goods</i>	<i>Consumer durables</i>	<i>Consumer non-durables</i>
1991-92	6.2	-12.8	-0.7	-1.8	-12.5	1.2
1992-93	2.6	-0.1	5.3	1.9	-0.9	2.5
1993-94	9.5	-4.2	11.8	3.9	16.3	1.3
1994-95	9.6	9.2	5.3	12.1	16.2	11.2
1995-96	10.8	5.3	19.4	12.8	25.8	9.8
1996-97	3.0	11.5	8.1	6.2	4.6	6.6
1997-98	6.9	5.8	8.0	5.5	7.8	4.8
1998-99	1.6	12.6	6.1	2.2	5.6	1.2
1999-2000	5.5	6.9	8.8	5.7	14.1	3.3
2000-01	3.7	1.8	4.7	8.0	14.5	5.8
2001-02	2.6	-3.4	1.5	6.0	11.5	4.1
2002-03	4.9	10.5	3.9	7.1	-6.3	12.0
2003-04	5.4	13.6	6.4	7.1	11.6	5.8
2004-05	5.5	13.9	6.1	11.7	14.4	10.8
2005-06	6.7	15.8	2.5	12.0	15.3	11.0
2006-07	10.3	18.2	12.0	10.1	9.2	10.4
2007-08	7.0	18.0	9.0	6.1	-1.0	8.6
2008-09	2.6	7.3	-1.9	4.7	4.5	4.8
2009-10	7.2	19.3	13.6	7.3	26.2	1.3

Source: Handbook of Industrial Policy and Statistics 2007-08, Office of the Economic Adviser Department of Industrial Policy & Promotion, Ministry of Commerce & Industry, Government of India, New Delhi and Handbook of Statistics in Indian Economy, Reserve Bank of India 2010.

Annexure-II

Growth Rate of Manufacturing Industries 1991-92 to 2000-01 & 2001-02 to 2009-10 (per cent)

<i>Industries</i>	<i>Weights</i>	<i>1991-92 to 2000-01</i>	<i>2001-02 to 2009-10</i>
20-21. Food Products	5.33	4.11	1.66
22. Beverages & Tobacco	1.57	10.35	11.68
23. Cotton Textiles	12.31	5.26	3.43
24. Wool, Silk & Manmade fibre Textiles*	-	10.7	4.27
25. Jute and other veg. Fibre Textiles	2.0	1.25	-1.74
26. Textile products & Apparel	0.82	2.37	8.7
27. Wood & Wood products, Furniture	0.45	1.02	3.76
28. Paper, Paper products and Printing	3.23	6.64	5.8
29. Leather & Fur products	0.49	4.42	0.87
30. Basic Chemicals and Chemical products	4.0	7.59	8.37
31. Rubber, Plastic, Petroleum & coal products	12.51	4.61	7.06
32. Non-metallic mineral products	3.0	9.76	6.91
33. Basic Metals & Alloy Industries	9.80	8.18	9.92
34. Metal Products	2.29	3.75	4.88

<i>Industries</i>	<i>Weights</i>	<i>1991–92 to 2000–01</i>	<i>2001–02 to 2009–10</i>
35. Non-electrical machinery & machine tools	6.24	7.21	13.9
36. Electric machinery & appliances**	5.78	-	-
37. Transport equipment	6.39	7.85	12.67
38. Other manufacturing industries	0.90	5.29	10.12

*For wool, silk and manmade fibre textiles data available from 1995–96; ** Data not available.

Source: Economic Survey, Government of India, various years.

Annexure-III

Industrial Production Growth of Manufacturing Sector 1991–92 to 2009–10 (per cent)

<i>Period</i>	91– 92	92– 93	93– 94	94– 95	95– 96	96– 97	97– 98	98– 99	99– 00	00– 01
20-21. Food products	4.9	-1.4	-8.8	21.6	6.7	3.5	-0.4	0.7	4.2	10.1
22. Beverages & tobacco	2.4	5.9	21.2	3.0	13.3	13.5	19.4	12.9	7.6	4.3
23. Cotton textiles	9.8	8.0	7.0	0.9	10.5	12.1	2.4	-7.7	6.7	2.9
24. Wool, silk & manmade fibre textile					14.7	10.5	18.5	2.8	11.9	5.8
25. Jute & other veg. Fibre tex.	-10.7	-4.2	18.6	-8.5	11.9	-4.5	16.9	-7.3	-0.5	0.8
26. Textile products & apparel	-5.7	-22.0	-3.2	-1.5	35.7	9.4	8.5	-3.5	2.0	4.0
27. Wood & wood products, furniture	-5.2	2.9	4.6	3.1	19.4	7.1	-2.6	-5.8	-16.2	12.9
28. Paper, paper products & printing	2.5	3.9	6.6	8.6	15.6	9.1	6.9	16.0	6.3	-9.1
29. Leather & fur products	-6.7	3.6	2.8	-13.4	13.7	9.4	2.2	8.1	13.8	10.7
30. Basic chemicals & chem. Products	2.8	6.0	7.5	5.3	11.2	4.8	14.4	6.6	10.0	7.3
31. Rubber, plastic, petroleum and coal products	-1.1	1.5	1.0	7.7	7.8	2.0	6.8	9.7	-1.1	11.8
32. Non-metallic mineral products	6.2	1.9	4.5	8.3	23.6	7.9	13.4	8.3	24.4	-0.9
33. Basic metals & alloy industries	5.7	0.5	33.0	13.1	15.8	6.7	2.7	-2.5	5.0	1.8
34. Metal products	-7.0	-6.4	1.5	5.6	-4.6	9.7	7.9	17.0	-1.2	15.0
35. Non-electrical machinery & machine tools	-2.0	-1.9	4.5	15.8	18.7	5.0	5.8	1.5	17.4	7.3
36. Electric machinery & appliances										
37. Transport equipment	-0.8	5.0	5.3	13.3	16.9	12.5	2.6	20.0	5.7	-2.0
38. Other manufacturing industries	-30.4	25.6	-5.1	8.5	25.8	25.6	-1.3	0.1	-16.0	11.7

<i>Period</i>	01–02	02–03	03–04	04–05	05–06	06–07	07–08	08–09	09–10
20-21. Food products	-1.6	11.0	-0.5	-0.4	2.0	8.6	7.0	-9.7	-1.5
22. Beverages & tobacco	12.2	27.9	8.5	1.8	15.7	11.0	12.0	16.2	-0.2
23. Cotton textiles	-2.2	-2.6	-3.1	7.6	8.5	14.8	4.3	-1.9	5.5
24. Wool, silk & manmade fibre textile	4.4	3.0	6.8	3.5	0	7.8	4.8	0	8.1
25. Jute & other veg. Fibre tex.	-5.9	8.3	-4.2	3.7	-0.5	-15.8	33.1	-10.0	-24.4
26. Textile products & apparel	2.4	14.4	-3.2	19.2	16.4	11.6	3.7	5.8	8.5
27. Wood & wood products, furniture	-11.0	-17.6	6.8	-8.4	-5.8	29.1	40.6	-9.6	9.7
28. Paper, paper products & printing	3.0	6.8	15.6	10.5	-0.9	8.7	2.7	1.9	3.9
29. Leather & fur products	3.3	-3.2	-3.9	6.7	-2.8	0.4	11.7	-6.9	2.5

Period	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10
30. Basic chemicals & chem. Products	4.8	3.7	8.7	16.1	8.1	9.4	10.2	5.5	8.8
31. Rubber, plastic, petroleum and coal products	11.1	5.5	4.5	2.4	4.3	12.9	8.9	-1.5	15.4
32. Non-metallic mineral products	1.1	5.1	3.7	11.8	11.5	11.7	6.8	0.8	9.5
33. Basic metals & alloy industries	4.3	9.2	9.1	5.4	15.8	22.9	12.1	4.0	6.5
34. Metal products	-10.0	6.4	3.7	29.1	-3.3	13.3	-7.3	0.5	11.5
35. Non-electrical machinery & machine tools	1.3	1.6	15.8	30.6	12.6	16.6	12.4	9.0	20.6
36. Electric machinery & appliances									
37. Transport equipment	6.8	14.6	17.0	16.4	11.6	14.4	3.9	2.4	26.9
38. Other manufacturing industries	8.9	0.6	7.7	17.1	17.2	8.8	18.5	3.5	9.3

Source: Economic Survey, Government of India, various years.

Annexure-IV

Number of Factories (in number and growth rate in per cent per annum)

	91-92	95-96	00-01	06-07	91-92 to 00-01	00-01 to 06-07
15. Food products & beverages	19,869	23,003	23,990	25,759	2.07	3.81
16. Tobacco products	8,299	7,229	2,697	3,226	-6.75	3.27
17. Textiles	9,964	12,818	13,560	15,035	3.61	1.81
18. Apparel & dyeing fur	1,966	3,512	3,374	3,661	7.16	1.42
19. Leather products & tanning	1,820	2,280	2,379	2,400	3.07	0.15
20. Wood & wood products	3,103	3,473	3,226	3,074	0.40	-0.79
21. Paper & paper products	2,111	2,742	3,425	3,868	6.23	2.16
22. Publishing & printing	3,111	3,399	3,177	3,416	0.21	1.25
23. Coke, petroleum products	596	714	917	965	5.39	0.87
24. Chemicals and chemical products	7,635	9,765	10,669	11,065	3.97	0.62
25. Rubber & plastic products	4,542	5,580	6,694	7,798	4.74	2.75
26. Non-metallic minerals	9,919	11,546	11,677	15,085	1.77	4.87
27. Basic metals	6,097	6,820	7,055	7,795	1.57	1.75
28. Fabricated metal products	6,517	7,561	8,233	9,019	2.63	1.59
29. Machinery & equipments N.E.C.	8,587	9,496	9,384	9,574	0.93	0.34
30. Office, accounting & computing machinery	259	306	224	191	-135	-2.46
31. Electric machinery & apparatus N.E.C	2,998	3,584	3,902	4,046	3.02	0.62
32. Radio, T.V. & commn equipment	1,189	1,223	1,179	958	-0.08	-3.13
33. Medical, optical instruments, watches & clocks	879	908	988	1,026	1.24	0.05
34. Motor vehicles & trailers	1,973	2,286	2,684	3,261	3.60	3.58
35. Transport equipment	1,775	1,869	1,920	1,777	0.82	-1.41
36. Furniture	1,626	2,048	2,078	2,650	2.78	4.59
Others	4,556	8,998	4,252	5,917	0.67	6.53
Manufacturing	104,835	122,162	123,545	135,794	1.79	1.65

Source: Economic Survey, Government of India, various years.

Annexure-V
Gross value-added to unit of Fixed Capital Industries (both at constant)
1991-92 to 2006-07

<i>Year</i>	15	16	17	18	19	20	21	22
1991-92	0.845	4.336	0.755	2.479	0.998	1.060	0.512	1.295
1992-93	0.736	3.619	0.675	2.299	1.155	0.963	0.477	1.323
1993-94	0.784	3.485	0.668	2.319	1.358	0.646	0.377	1.595
1994-95	0.732	2.641	0.596	1.674	0.839	0.736	0.230	1.216
1995-96	0.605	3.446	0.410	1.303	0.706	0.565	0.416	1.089
1996-97	0.686	2.839	0.421	1.177	0.792	0.571	0.250	1.012
1997-98	0.563	2.155	0.370	0.925	0.914	0.431	0.258	0.468
1998-99	0.620	2.577	0.341	1.367	0.702	0.404	0.226	0.504
1999-2000	0.524	2.454	0.296	1.031	0.770	0.581	0.191	0.652
2000-01	0.511	2.409	0.337	0.902	0.557	0.396	0.336	0.660
2001-02	0.519	2.482	0.338	0.944	0.689	0.473	0.283	0.683
2002-03	0.466	2.599	0.364	0.993	0.645	0.479	0.262	0.744
2003-04	0.448	2.372	0.359	0.858	0.678	0.459	0.289	0.743
2004-05	0.451	2.613	0.388	0.900	0.630	0.426	0.288	0.678
2005-06	0.527	2.716	0.369	0.827	0.723	0.665	0.312	0.664
2006-07	0.599	2.505	0.319	0.884	0.734	0.339	0.299	0.599

<i>Year</i>	23	24	25	26	27	28	29	30
1991-92	0.548	0.549	0.749	0.615	0.233	1.206	1.075	1.512
1992-93	0.754	0.633	0.662	0.471	0.275	0.932	0.844	1.400
1993-94	0.714	0.581	0.513	0.384	0.261	0.795	0.934	2.062
1994-95	0.729	0.500	0.497	0.358	0.272	0.782	0.932	1.589
1995-96	0.695	0.476	0.428	0.410	0.271	0.785	0.980	0.977
1996-97	0.661	0.471	0.264	0.294	0.291	0.708	0.909	1.228
1997-98	0.273	0.375	0.453	0.307	0.355	0.594	0.750	0.657
1998-99	0.184	0.490	0.348	0.202	0.208	0.645	0.688	1.313
1999-2000	0.243	0.446	0.452	0.224	0.267	0.640	0.798	1.528
2000-01	0.269	0.384	0.403	0.297	0.226	0.693	0.783	0.702
2001-02	0.213	0.372	0.422	0.264	0.220	0.651	0.765	0.734
2002-03	0.371	0.443	0.430	0.282	0.287	0.637	0.640	0.546
2003-04	0.441	0.443	0.434	0.275	0.329	0.713	0.746	0.545
2004-05	0.526	0.512	0.377	0.341	0.501	0.782	0.825	0.406
2005-06	0.635	0.462	0.456	0.345	0.368	0.856	0.861	0.816
2006-07	0.730	0.475	0.421	0.501	0.455	0.860	0.996	0.607

<i>Year</i>	31	32	33	34	35	36	<i>Total munf.</i>
1991-92	1.261	0.945	0.774	0.936	0.923	1.923	0.628
1992-93	1.321	1.005	0.630	0.792	0.869	1.410	0.617
1993-94	1.059	0.838	0.616	0.707	0.945	2.646	0.591
1994-95	1.016	0.936	0.574	0.806	0.851	1.455	0.547
1995-96	1.093	0.575	0.631	0.926	1.051	1.149	0.515

Year	31	32	33	34	35	36	Total munf.
1996-97	0.946	0.533	0.690	0.652	0.983	1.350	0.494
1997-98	0.988	0.622	0.424	0.674	0.795	1.484	0.451
1998-99	0.849	0.497	0.883	0.313	0.831	1.014	0.381
1999-2000	0.474	0.525	0.897	0.333	0.697	1.591	0.396
2000-01	0.616	0.446	0.785	0.283	0.595	0.994	0.387
2001-02	0.638	0.533	0.898	0.352	0.801	0.656	0.407
2002-03	0.595	0.534	0.833	0.464	0.857	0.809	0.427
2003-04	0.727	0.375	0.904	0.632	0.910	0.865	0.450
2004-05	0.891	0.426	0.904	0.703	0.936	1.069	0.521
2005-06	1.085	0.438	1.190	0.884	0.995	0.928	0.528
2006-07	1.365	0.464	1.242	0.761	1.321	1.156	0.570

Source: Economic Survey, Government of India, various years.

Annexure-VI

Gross Value-added Per Worker in Industries in Constant Prices (₹ lakh per worker)

Year	15	16	17	18	19	20	21	22
1991-92	0.785	0.303	0.711	0.990	0.757	0.519	1.423	1.059
1992-93	0.709	0.296	0.720	0.887	0.776	0.470	1.289	1.136
1993-94	0.894	0.349	0.899	1.287	1.097	0.591	1.302	1.615
1994-95	1.024	0.284	0.993	1.083	0.779	0.559	1.537	1.409
1995-96	0.946	0.290	0.793	0.953	0.793	0.527	1.891	1.457
1996-97	1.149	0.394	0.970	0.850	0.856	0.836	1.446	1.709
1997-98	1.108	0.352	0.996	0.828	1.006	0.516	1.264	1.485
1998-99	1.398	0.542	0.980	0.997	1.013	0.637	1.512	2.126
1999-2000	1.372	0.637	1.054	1.055	1.147	0.805	1.532	2.800
2000-01	1.300	0.660	1.104	0.908	0.872	0.716	2.317	2.635
2001-02	1.352	0.611	1.025	0.834	0.885	0.789	1.935	2.603
2002-03	1.338	0.730	1.121	0.927	0.837	0.884	2.179	2.848
2003-04	1.254	0.707	1.096	0.737	0.882	0.872	2.004	3.183
2004-05	1.261	0.701	1.094	0.780	0.782	0.789	1.937	2.992
2005-06	1.489	0.735	1.227	0.745	0.923	1.207	2.285	3.531
2006-07	1.931	0.841	1.269	0.864	1.002	0.790	2.220	3.482

Year	23	24	25	26	27	28	29	30
1991-92	5.709	2.538	1.657	1.311	1.554	1.212	1.619	4.127
1992-93	7.745	3.123	1.737	1.022	1.891	1.082	1.636	5.121
1993-94	9.016	3.388	1.797	1.070	2.077	1.305	1.694	8.804
1994-95	8.896	3.457	1.579	1.164	2.420	1.345	1.768	6.417
1995-96	9.534	4.041	1.712	1.469	2.627	1.528	2.096	3.792
1996-97	12.166	3.906	1.851	1.360	2.684	1.377	2.306	4.269
1997-98	5.833	3.798	2.302	1.594	3.723	1.536	2.226	2.142
1998-99	11.137	5.637	2.188	1.488	3.428	1.685	2.229	4.988
1999-2000	8.884	5.632	2.527	1.967	3.521	1.613	3.012	6.357
2000-01	13.122	4.878	2.223	2.013	3.064	1.535	2.807	5.627
2001-02	15.158	4.971	2.418	1.911	2.985	1.634	2.899	6.227

Year	23	24	25	26	27	28	29	30
2002-03	28.433	5.334	2,546	1.332	4.232	1.630	2.668	9.799
2003-04	33.142	5.602	2.444	1.896	5.502	1.769	3.049	10.227
2004-05	34.628	5.641	2.376	2.152	7.995	1.707	3.116	5.951
2005-06	42.896	6.047	2.148	1.975	6.142	2.055	3.690	11.792
2006-07	45.821	6.095	2.075	2.552	6.875	2.423	3.827	6.748

Year	31	32	33	34	35	36	Total Munf.
1991-92	2.054	2.542	1.588	2.060	0.890	0.913	1.225
1992-93	2.276	2.588	1.456	1.982	0.915	1.118	1.301
1993-94	2.224	2.410	1.777	2.102	0.969	2.045	1.465
1994-95	2.726	3.356	1.792	2.344	0.955	1.450	1.555
1995-96	3.019	2.307	1.964	3.428	1.123	1.422	1.676
1996-97	2.597	2.432	2.111	3.543	1.267	1.348	1.750
1997-98	3.013	3.215	1.808	3.085	1.242	1.835	1.793
1998-99	3.232	3.437	2.595	2.700	1.217	1.719	2.066
1999-2000	2.950	3.815	2.609	3.431	2.626	2.338	2.234
2000-01	2.739	3.580	2.662	2.959	1.992	1.761	2.079
2001-02	3.104	4.219	3.611	3.299	2.961	2.252	2.147
2002-03	3.079	4.969	3.055	3.471	3.914	1.688	2.370
2003-04	3.196	4.782	3.512	4.463	3.478	1.720	2.614
2004-05	3.170	4.297	3.851	4.814	3.758	1.850	2.843
2005-06	4.019	4.575	3.760	5.735	4.053	1.856	3.024
2006-07	5.104	4.502	3.654	4.711	4.055	1.989	3.261

Annexure-VII
Fixed Capital Per Worker (constant price) in Industries
from 1991-92 to 2006-07 (in ₹ Lakh)

Year	15	16	17	18	19	20	21	22
1991-92	0.929	0.070	0.942	0.399	0.758	0.490	2.778	0.818
1992-93	0.964	0.082	1.067	0.382	0.696	0.488	2.761	0.859
1993-94	1.141	0.100	1.345	0.511	0.808	0.916	3.440	1.013
1994-95	1.399	0.108	1.665	0.647	0.929	0.759	6.672	1.159
1995-96	1.564	0.084	1.937	0.731	1.123	0.931	4.545	1.338
1996-97	1.676	0.139	2.303	0.722	1.081	1.463	5.798	1.688
1997-98	1.969	0.164	2.692	0.895	1.101	1.197	4.893	3.172
1998-99	2.252	0.211	2.878	0.730	1.443	1.580	6.683	4.214
1999-2000	2.260	0.260	3.557	1.023	1.489	1.386	8.007	4.293
2000-01	2.542	0.274	3.275	1.007	1.512	1.805	6.902	3.991
2001-02	2.605	0.246	3.033	0.884	1.285	1.666	6.843	3.809
2002-03	2.869	0.281	3.082	0.934	1.298	1.846	8.310	3.830
2003-04	2.797	0.298	3.056	0.858	1.300	1.900	6.932	4.282
2004-05	2.799	0.268	3.072	0.866	1.240	1.851	6.722	4.412
2005-06	2.824	0.271	3.327	0.900	1.276	1.815	7.316	5.315
2006-07	3.223	0.336	3.978	0.978	1.366	2.326	7.431	5.815

<i>Year</i>	23	24	25	26	27	28	29	30
1991-92	10.409	4.622	2.214	2.131	6.665	1.005	1.507	2.730
1992-93	10.269	4.937	2.626	2.617	6.875	1.161	1.938	3.657
1993-94	12.620	5.829	3.504	2.787	7.952	1.642	1.813	4.269
1994-95	12.200	6.914	3.167	3.249	8.912	1.720	1.897	4.038
1995-96	13.728	8.490	4.003	3.586	9.532	1.947	2.138	3.881
1996-97	18.397	8.292	7.003	4.623	9.215	1.944	2.537	3.478
1997-98	21.379	10.124	5.075	5.189	10.483	2.587	2.969	3.259
1998-99	60.695	11.500	6.297	7.358	16.449	2.611	3.242	3.799
1999-2000	36.499	12.620	5.594	8.772	13.167	2.520	3.774	4.159
2000-01	48.731	12.717	5.519	6.786	13.550	2.215	3.586	8.016
2001-02	71.105	13.345	5.731	7.248	13.550	2.511	3.788	8.480
2002-03	76.622	12.042	5.928	4.722	14.731	2.559	4.166	17.953
2003-04	75,154	12.643	5.636	6.885	16.735	2.480	4.086	18.779
2004-05	65.793	11.015	5.296	6.301	15.963	2.182	3.778	14.658
2005-06	67.566	13.093	4.708	5.727	16.687	2.401	4.287	14.459
2006-07	62.785	12.825	4.923	5.094	15.104	2.818	3.841	11.124

<i>Year</i>	31	32	33	34	35	36	<i>Total munf.</i>
1991-92	1.630	2.689	2.051	2.202	0.965	0.475	1.950
1992-93	1.723	2.575	2.310	2.503	1.053	0.793	2.111
1993-94	2.100	2.876	2.883	2.973	1.025	0.773	2.477
1994-95	2.684	3.585	3.124	2.910	1.123	0.997	2.843
1995-96	2.761	4.014	3.110	4.014	1.069	1.237	3.256
1996-97	2.745	4.567	3.058	5.435	1.289	0.999	3.545
1997-98	3.050	5.168	4.265	4.580	1.562	1.244	3.979
1998-99	3.809	6.916	2.940	8.634	1.465	1.696	5.380
1999-2000	6.224	7.264	2.909	10.310	3.770	1.469	5.643
2000-01	4.449	8.364	3.389	10.460	3.348	1.771	5.369
2001-02	4.867	7.913	4.021	9.385	3.698	3.435	5.274
2002-03	5.171	9.298	3.667	7.483	3.746	2.086	5.553
2003-04	4.397	12.641	3.886	7.060	3.820	1.989	5.813
2004-05	3.559	10.081	4.258	6.851	4.014	1.733	5.463
2005-06	3.703	10.440	3.160	6.486	4.074	1.999	5.724
2006-07	3.739	9.698	2.941	6.188	3.849	1.720	5.726

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