

# The indian manufacturing sector performance economics essay



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## **Chapter 2**

### **Introduction**

The manufacturing sector performance has always been the focus of academic and polity debates and especially so in India, due to the deviation of the same from theorized behavior (Developmental theory of transition of economies). Even recently, in the discourse on the recession, its aftermath and revival, the highlight was the manufacturing sector performance, since it is seen to be on retreat (After the 2008 crisis, it regained momentum (from a drop of about 10 percentage points in 2008 - 09) in 2009 - 10 at 9. 7% (simple average annual growth) but since then it has been on a decline and in 2011 - 12 it was at 2. 5%). The major industries (automobiles, chemicals, machinery & equipment, textiles etc.) experiencing receding growth rates has seen the National Manufacturing Policy (2011) (which introduces the NIMZs (in addition to SEZs) to address the infrastructural bottlenecks faced by the industry) and other such critical measures from the government,

especially since it fears that a recovery is unseen in the horizon, given the probable interactive effects of rising interest rates, escalating fuel and input costs, the volatile exchange rate, falling domestic demand, uncertain global economic scenario and policy paralysis (Bhandare, 2011). This importance accorded to the sector arises from three main points, namely, its importance towards macro - economic stability, its employment implications (given that the services sector, though the highest contributor to the GDP, contributes only about a quarter of the total employment and given that manufacturing sector employs, unskilled, semi - skilled and skilled labour), its forward and backward linkages with the other sectors (which makes it the key to boosting the economy's vital signs) and finally due to the emphasis that was placed on it (for an industry - led development) by the development theories and India's early development strategy. As Bhandare, rightly puts it, neither reforming the primary sector nor the leapfrogging of the services sector alone can deliver India a BALANCED and long term (sustainable) development.

The idea of self - reliance was at the roots of India's development plans in the immediate decades after independence and this was the reason for the heavy emphasis on developing a strong industrial base for the country and thereby for the heavily monitored and regulated industrial policy regime. The focus and the responsibility to bring about the same (through strategic promotion of the heavy industries), fell on the public sector and as Trivedi et. al (2011) notes, the private sector was to play only a supplementary role.

Some notable features of the ' Restrictive Regime' were direct physical controls like capacity licensing, reservation of certain industries to the public

sector (or rather the restriction of private sector from certain industries), tariff and non - tariff barriers to imports, foreign exchange and investment regulations, other market regulations like MRTP etc. The transition to the ' Limited Liberalisation Regime' (as termed by Burange & Yamini, 2011) happened towards the late 1970s and was marked by a slow shift from direct physical controls to indirect controls through selective delicensing and deregulation, encouraging the private sector in some industries, marginal relaxation of the tariff rates etc. The main aim of the reforms were to unleash the growth potential of the sector since the performance of the sector, prior to the late 70s, mirrored the performance of the economy which was characterized by growth rates which ranged at around 3%, that were infamously dubbed the ' Hindu growth rate'. The Industrial policy regime then followed has been pointed to as the cause for the industrial stagnation by many, including Ahluwalia (1991) who also argues that the 80s reforms succeeded in bringing about a positive shift in the growth path of output and productivity. The 1991 reforms reflected explicit liberalization in the Industrial sector with the New Industrial Policy (1991) and were enacted with the primary intent of wading through the severe fiscal and macro economic crisis that India was mired in, at the time. These reforms were comprehensive and macro - economic in nature and structural adjustment and stabilization were at the core of the 90s reforms (Trivedi et. al, 2011). These differences naturally generated expectations of higher growth paths of output and productivity than that of the 80s period. But as they note, the reforms succeeded in pulling the economy out of the crisis and in alleviating the foreign exchange constraint and controlling inflation but not in bringing about an upward shift in the growth of output and productivity.

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These expectations about the performance results of liberalization stems from the theorized behavior of Liberalisation (from cross country analyses of the effects of liberalization by developmental theorists), especially in developing countries. The logic behind this argument that liberalization leads to growth, especially in developing countries, has been covered by the developmental theory literature under four threads. First being that, liberalization leads to technological improvement which generates more efficient capacity utilization and thereby promotes investment and exports. This eventually leads to more robust output growth. Second theory states that liberalization increases competitive pressure in the economy and this will result in the exit of inefficient firms. The exit of the inefficient 'tail' would leave the average efficiency in the economy higher up and thereby result in better output growth. The third is that liberalisation will release the producers from the disadvantages of inefficiencies and increase the incentives for geographical diversification which implies capture of new export markets and expansion activities like mergers and acquisitions and these will raise the rate of growth of output of the sector. Another theory that stems from the Hecksher - Ohlin model and proposes that liberalization will free the factors of production from inefficient regulations and costs and thereby will benefit the country's abundant factor.

Performance is usually considered synonymous with growth performance and therefore, is always assessed keeping growth as the key measure.

Krugman (1994) notes that economic growth is the sum of two sources of growth, namely, increase in inputs and increase in output per unit of inputs (i. e, productivity). Growth Accounting calculates explicit measures of both to

calculate what percentage of growth accrues to each input and what percentage to productivity and efficiency. The separate but interdependent concepts of Productivity, Efficiency and Competitiveness are indicators of performance. Growth via improved productivity (and not increased inputs) is the focus of any strategy that aims at sustainable growth and therefore productivity analysis is an integral part of any performance analysis. Mouelhi (2007) considers output growth, employment growth, productivity growth, exports growth and capital – intensity growth as the indicators or elements of performance of the manufacturing sector. In this paper we analyse output and employment growth using data from the Annual Survey of industries and productivity growth using prior literature.

## **Motivation**

Figure 1.

Simple Annual Growth in GDP At Factor Cost, Constant Prices, Base Year 2004 – 05

Source: RBI, Handbook Of Statistics on the Indian Economy

From the above figure it could be considered safe to say that the manufacturing sector and its growth rates do (quite heavily) influence the economy's growth rate. That is to say, the direction of the manufacturing sector does reflect the mood of the economy or vice versa. Also, it is noted from the movement of the GDP and Share in GDP of both the Industry and Manufacturing sectors that ' Manufacturing' pulls ' Industry' (by a vastly higher measure) as compared to ' Mining & Quarrying' And ' Electricity, Gas & Water Supply' (namely, the other components of ' Industry'). So it is <https://assignbuster.com/the-indian-manufacturing-sector-performance-economics-essay/>

assumed safe to use the IIP for the analysis under the study. So, it would be imperative to study the movements of the manufacturing sector especially under the current context of uncertainty over the global dynamics and India's own concerns.

Literature on the impact of liberalization is vast and divergent, with disagreements on the results, data quality and data sources, methodology, indicators and their scope, model specification etc. and therefore, as Rodrik (1997) says, ' the nature of the relationship between trade policy and economic growth remains very much an open question'.

## **Theories Examined**

Despite the aforesaid emphasis on the manufacturing sector in Indian planning outlays and strategies, share of manufacturing in GDP and its growth rate has only been modest at around 16% in 2009 - 10, from about 13% in 1970 - 71 and 15% in 1990 - 91. So, Trivedi et. al (2011) argues that the 90s reforms brought about increase in growth and productivity as did the 80s reforms. But these fell short of expectations especially when considering the fact that the reforms of 1991 were macro - economic in nature while those of the 80s were restricted to the fiscal and industrial sector reforms. And further they cite Rodrik and Subramanian (2005) that there has been no structural break in either output or productivity growth since the initiation of the 90s reforms and that the 1980s reforms had resulted in an improved growth performance of Real Gross Output (compared to the Restrictive regime). But though this growth momentum has been maintained in the 1990s, they find no ' statistically significant' improvement in the same. As noted by Chaudhuri (2009), Nagaraj (2011), Burange & Yamini (2011), <https://assignbuster.com/the-indian-manufacturing-sector-performance-economics-essay/>

Kalirajan (2004) and many others, the pattern of manufacturing growth observed before 1991 was that of periods of high growth invariably followed by periods of low growth. The period after 1991 has brought no difference to this trend. The rate is seen to fluctuate widely even in the post-reforms period, registering a decline since the early years, picking up in 1993 and decelerating again in the late 1990s. It has recovered since 2002-03 and fell back after 2007-08. The factors behind this instability of the sector ranges from famines to business cycles to shifts in policy regimes. Chaudhuri (2009) makes the following observations. The (compound annual) rate of growth for the manufacturing sector between 1991-92 and 2007-08 at 7.18% is only marginally higher than that attained during the first three plan periods (6.45%). Taking only the registered manufacturing sector, the increment between the periods is negligible at 0.1%. In fact the growth rate (for the registered manufacturing sector) during 1952-53 to 1964-65 (8.87%) and during 1980-81 to 1990-91 (8.29%) was higher than that in the post-reforms period (between 1992-93 and 2006-07) at 7.99%.

Using the Kinked Exponential Model for structural break analysis in growth rates, we find that there is only a marginal difference between the coefficients  $b_1$  and  $b_2$  which means that there is no substantial structural break in the Manufacturing GDP data. The analysis is for the period from 1980 - 81 to 2000 - 01. The kink is analysed at 2 different years, namely, 1990 - 91 and 1996 - 97 and no significant break is found in either year. But on analysing the same period for the Manufacturing Value Of Real Gross Output we note the structural break at 1996 - 97 is significant. The structural break is highly significant if Net Value Added of Manufacturing is brought



under the analysis, over the same period. This implies that the analysis backs the argument that there hasn't been any substantial increase in the growth path of the Manufacturing output in the 1990s from that of the 1980s, in terms of Sectoral GDP. But when considering the Value Of Real Gross Output or Value Added of the sector, it seems there has been a structural break in 1996 – 97. Therefore, the analysis cannot be taken to validate or refute Rodrik and Subrahmanian's argument that there hasn't been a structural break in output growth since 1991.

Figure 2.

Kinked Exponential Model for Manufacturing GDP (1980 – 2000)

Source: Own calculation

Table 1.

Kinked Exponential Model for Manufacturing GDP (1980 – 2000)

Source: Own calculation

Figure 3.

Kinked Exponential Model for Manufacturing RGO (1980 – 2000)

Source: Own calculation

Table 2.

Kinked Exponential Model for Manufacturing RGO (1980 – 2000)

Source: Own calculation

Figure 4.

Kinked Exponential Model for Manufacturing NVA (1980 – 2000)

Source: Own calculation

Table 3.

Kinked Exponential Model for Manufacturing NVA (1980 – 2000)

Table 4.

CAGR Of Manufacturing GDP and its Share in GDP

Source: Own calculation

Table 5.

Summary Statistics Of Manufacturing GDP and its Share in GDP

Source: Own calculation

Table 4, provides the Compound Annual Growth Rates for the different sub – periods, from 1950 – 51 to 2011 – 12, and it can be seen that there has been only a marginal improvement in the CAGR in the 1990s as compared to that of the 1980s. And as table 5 shows, there has been a decrease in the absolute volatility in the growth in Manufacturing GDP in the 1980s (as seen from the Standard Deviation values) which is followed by an increase in the 90s only to further decline in the 2000s. The relative variability in the period

1991 - 92 to 2000 - 01 at 0.87 is higher than that of the previous period at 0.40. Growth rate of Share of the Manufacturing sector in GDP also follows the same trend. Another point worth noting is that there has been a consistent decline in the average growth in share of Manufacturing in GDP and this confirms what has been noted by Kalirajan (2004). Since 1997 - 98, along with the decelerating growth there has been a decline in the share of manufacturing in total GDP. Also, as noted by Mani (2011) and Nagaraj (2011), the share of manufacturing sector in GDP was stagnating at around 15% even as the growth of the sector was at around 10% for over five years. Therefore, the data seems to point that the 90s reforms have not led to substantial positive changes in the growth path of output from that of the 80s.

Another point to note is that there is an improvement in all the figures in the 2000s (starting from the late 90s). Rodrik and Subrahmanian (2005) explains this as the J - Curve effect of Productivity and Output growth. The J Curve rationale blames the major structural changes ensuing liberalization (and the adjustment process thereafter) for the initial slowdown in the sector (Hashim et al, 2009). Virmani (2005, 2006) proposed the hypothesis of the J-curve of productivity and output growth following major reforms and the differences in the pattern of productivity that was noticed to be brought about by the pacing of reforms. From empirical evidence we also see that the timing (pace) and sequencing of the reforms impact growth performance. The productivity and output growth path is hypothesized to take the form of a J, S or a hybrid S-J Curve which is explained by the pacing of the reforms (namely, major reforms or gradual reforms). Virmani & Hashim (2011) notes

that in India, the hypothesis was proved true during the 1980s but not during the 1990s. Their analysis shows a clear J-curve pattern of total factor productivity growth for Indian manufacturing as predicted by the J-curve hypothesis which, in turn, was reflected in output growth. Nagaraj (2011) puts forth the recurrence of booms and deceleration (in itself) as the pattern of growth in output after finding out that after a (theoretically) expected dip in 1991-92 (on account of the crisis and adjustment), output boomed for four years, peaking in 1995-96 at 13% (following the predicted 'J' curve) and that the boom petered out quite quickly, followed by a steep deceleration for seven years until 2002 - 03 while the next boom lasted for 5 years, from 2003 - 04 to 2007 - 08.

As Kochhar et al (2006) notes, India has not conformed to the development theory of transition economies whereby the usual trend is a massive transfer of unskilled labour from agriculture to manufacturing (or industry). That is, the manufacturing employment post-reforms has been stagnant and India's services sector-led growth has been laid to blame for this. Contribution of manufacturing to total employment is the lowest, that is, in India, services sector absorbs more labour than the manufacturing sector. The trend in employment generation of the registered manufacturing sector tells a different story from that of its output generation. Employment in the factory sector has been declining despite the acceleration in the growth rate of output since 2000 - 01 and in 2003 - 04 and the figure was 10% lesser than that in 1995 - 96 (Chaudhuri, 2009). This pans the issue of 'Jobless Growth' that has been (nearly) comprehensively covered by literature bringing forth the issue of growing capital intensity, and cheaper relative price of capital

resulting in substitution of labour for capital as the primary cause. This poses a theoretical impasse, since (market - oriented) economic policy reforms are conventionally expected to result in an acceleration in the rate of growth of output and productivity thanks to the underlying short term gains in static efficiency (through re-allocation of factors to efficient uses) and dynamic efficiency gains.

One view (Goldar, 2000, 2011) says that there is a substantial increase in organised manufacturing employment in the liberalised regime of 1990-91 to 1997- 98 and 2003 - 04, as compared to the 80s. Nagaraj (2004, 2011) has contradicted this noting that the employment growth when analysed in the same picture as that of capital growth asserts the ' jobless growth phenomenon'. According to him, the whole period can be termed as a period of jobless output growth where output has grown with more capital-intensive technology.

Stagnant per capita real wages are said to be another paradox whereby the natural transition of output growth into growth in real wages has not transpired yet in Indian manufacturing thereby raising concerns on lack of domestic demand. Trivedi et. al (2011) note a U trend emerging in the growth of real emoluments (from a revival in the figures from negative rates in the 90s) and the consistent decline in growth in real wages. They consider this to imply increasing compensation to the managerial and supporting staff while the workers face stagnant real per capita wages and raise concerns of inequality and productivity implications.

Table 6.

## CAGR Of Principal Manufacturing Aggregates

Source: Own calculation

Table 6 confirms the Jobless growth hypothesis which can be found to hold true for all three variables of labour, namely, Number of Workers, Number of Employees and Total Persons Engaged. What is to be noted is not only the definite declining (and negative) growth rates of the 90s, but also that Number of Workers and Number of Employees were on a declining growth path even in the 80s. And that growth in Number of Workers and Total Persons Engaged are seen to revive during the sub - period 1999 - 08. Another major concern is the different patterns exhibited by the growth in wages and that in emoluments. While both are found to be on a declining growth path, the rate of decrease in the growth of emoluments is substantially lesser than the steep and concerning decline in that of wages. The U trend noted by Trivedi et al (2011) cannot be brought forth due to unavailability of data on the same.

Some other features of the data under analysis, that are brought out by these summary figures are the decline in the growth of Real Gross Output, Net Value Added and Net Fixed Capital Formation show the same patterns of decline in the 1990 - 2000 sub - period and this extends to the 1995 - 04 sub - period. But the 1999 - 08 figures of NVA and NFCF show revival. Therefore this analysis seems to come out in support of the J Curve hypothesis of output and productivity growth.

Disaggregated Analysis is essential for assessing the structural dynamics of the sector. Guha (2008) noted that the inter temporal comparative analysis <https://assignbuster.com/the-indian-manufacturing-sector-performance-economics-essay/>

of the differences in the growth process at the disaggregated level explains the structural change that has occurred in the manufacturing sector (which in his analysis comes out to be substantial).

An S curve pattern is expected to be followed by the growth and TFP in positive response to the reforms, taking the sector from a lower steady state to a higher steady state. At the disaggregated level, we expect a majority of sub-sectors to follow an S-curve pattern, but also some fundamentally non-competitive sectors to project a decline (due to comparative disadvantage). Trends in productivity growth at the (disaggregated) sub-sector level of manufacturing showed a much more varied pattern of growth than at aggregate level. Out of the twenty two sub-sectors analysed in their paper, three followed an S-curve pattern (14%), eight followed a J curve pattern (36%), and ten followed a hybrid S-J pattern (45%). This is to be expected in a situation in which different policy reforms are paced differently and affect different industries to different degrees and the analyses by Guha (2008), Hashim, Kumar & Virmani (2009), Kaur & Kiran (2008) and others have empirically substantiated the differences in interpretation brought about by disaggregate analysis and the differences in impact of the policy reforms on different industries.

Also, using dummy variables to determine the effect of reforms on the TFPg across a disaggregated table, they find that according to the Growth Accounting Analysis, there has either been no acceleration or deceleration in all the subsectors (except Metals) and states (except WB and Haryana). But in their analysis using the Production Function Approach, they find that there

has been a revival in the TFPg post 90s. But even those figures reiterate that the revival fell much short of the expectations of Liberalization.

Table 7.

CAGR Of Principal Manufacturing Variables Across Major subsectors

Source: Own calculation

Table 7 gives the two digit level disaggregated analysis for the Indian manufacturing sector. Only 10 major industries that contributed above 2% as share in output and employment have been considered for the analysis. All industries show revival in the late 90s, with respect to growth in share in manufacturing employment. Dye and Fur industries, Chemical industries, Vehicle industries and Tobacco industries are the only sectors that do not exhibit negative growth rates, though without exception all show declining growth rates in the first two sub periods. In the case of growth in input intensity, all except the tobacco and textiles industry shows an increase in the last sub period (from a declining path, previously) which raises concerns over the sustainability of output growth in the sector. The rise in input intensity seen in the late 90s raises questions about the accuracy of the J curve inference that was reached upon earlier. The Food and Beverages sector shows the tendency of consistent decline in growth in RGO and NVA. Equally alarming is the dye and fur products industry which shows a steep decline in growth in share in RGO and NVA from a previously stable position. Vehicles industry is the only industry that manages to without a substantial decline with respect to growth in output.



The organized sector contributes only 20% of the total manufacturing output but more than 60% of its output while the unorganized sector accounts for about 80% of the employment but only about 33% of the total output of the manufacturing sector. This duality in the Indian manufacturing sector and the resultant structural dynamics and its implications (in the form of imbalances) finds reference in almost all of the growth performance literature. The sectoral, regional and (especially) structural imbalances in the manufacturing sector is also reflected in the form of the high wage differential between the registered and unregistered sectors, the differential in the employment and output share (respectively) of the two sectors etc. That is, the relative income contribution of the unorganized sector vis - a - vis the organized sector has been on consistent decline and this affects the labour productivity differentials between the sectors (Trivedi et. al 2011).

## **Data and Methodology**

This study focuses on the performance of the manufacturing sector using aggregate and disaggregated analysis of it. While keeping the aggregate picture, it examines the component industries to understand the effects of the structural dynamics of the sector on the sectoral aggregates. The period of study is 1981 - 82 to 2007 - 08 (though in some cases it is extended to include the periods 1971 - 72 to 1979 - 80 and 2008 - 09 to 2011 - 12, as a result of data availability). ASI is the main data source on aggregate and disaggregate level data. Data on IIP and GDP is from the RBI Database On Indian Economy.

IIP is an index of industrial production and not just manufacturing production, though manufacturing sector is a dominant component of the IIP  
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(contributing over 75% of the total weight) and therefore, additional variables like Value Added, Value of Gross Output and Sectoral GDP are used to complement the accuracy of the inference. Net Fixed Capital Formation series considered for analysis is at book value and not Real NFCF.

The sub sectors considered for disaggregate analysis are the Food and Beverages industry, the tobacco industry, the textiles industry, dyeing and fur production industry, the coke refined petroleum and nuclear products industry, chemicals industry, the metal industry, Machinery and equipments industry, Electricals industry and Vehicles (Automobiles) industry.

Trivedi et. al (2011) notes that the contribution of TFPg to output growth for the registered manufacturing sector ranges between 13 to 25% using alternative methodologies and therefore the analysis of the same is essential for any comprehensive performance assessment. But since the estimation and analysis of TFPg is vastly out of the scope and time frame of the current study, we confine ourselves to a literature based analysis on the topic. They note that the regional TFPg differences brings home the fact that states without much output growth but falling or negative rates of employment can also show high TFPg rates. Therefore, TFPg cannot be unconditionally used as an indicator of growth performance. TFP levels should be assessed alongside to get a clearer and more accurate picture.

In using Dummy variables to determine the impact of the reforms on TFPg by demarcating the pre and post reform periods, they note that it is difficult to isolate the impact of reforms from that of the other factors (that impact

TFPg) in the dummy variable analysis and also that the time lags in the impact cannot be taken into consideration, under the same.

## Conclusions

We find that the Indian manufacturing sector is seen to have faced a structural break when considering the growth in Real Gross Output and Net Value Added instead of Sectoral GDP. But this break is in the late 90s which gives basis to the J Curve hypothesis of output and productivity growth. Also the phenomenon of jobless growth is found to have been a feature of the manufacturing employment in the decades post - reforms, though latest data (till 2007 - 08) helps in finding a sign of revival in the same. The disaggregative analysis brings forth the disturbing trend in growth in input intensity in almost all the industries of the sector, thereby questioning the sustainability of the output growth achieved through liberalization. Tobacco, Dye and Fur, metals and Electricals industries are the only sectors that follow the J Curve pattern with respect to output growth.

Indian manufacturing landscape needs to be geared up through expansion, diversification, technological and competitive scaling up and skill enhancement, TFP growth, Efficiency growth and expansion of global footprint, namely, mergers and acquisitions and/or capturing new export markets (in the qualitative side) (Bhandare, 2011). There is a need to improve (all three performance indicators, namely) productivity, efficiency and competitiveness of India's manufacturing sector. And this needs to be achieved along with improvement in employment growth, keeping in view the demographic theory (the potential demographic dividend) and country's projected aim of 'inclusive' growth (as declared in the 12th five year plan).  
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With regard to the expectations and fears regarding liberalization, Nagaraj (2011) notes that industrial growth rate has not accelerated, nor has the growth rate of labour-intensive consumer goods gone up; but there has been no de-industrialization either, as the critics feared.