

# GROWTH OF THE INDUSTRIES UNDER ALTERNATIVE POLICY REGIMES: A DISAGGREGATED POLICY REVIEW WITH SPECIAL REFERENCE TO INDIAN MANUFACTURING SECTOR

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**Abstract** *The ever increasing role of the manufacturing sector in realising the dreams of establishing the 'socialistic pattern of the society' can never be undermined in the context of Indian economy. Since independence a number of industrial policies were taken up to foster the growth of manufacturing sector and other industries in India. The first phase of globalisation measures were initiated in late 1980s which resulted into an unsustainable growth story led by huge external borrowing and that ultimately culminated into the exchange rate crisis of 1991. In combating with such a severe crisis, the New Economic Policy was promulgated on 24th July, 1991 following the Structural Adjustment Programme (SAP) initiated by the Government of India as per IMF directions. The present paper evaluates the growth of the industry especially manufacturing industry under alternative policy regimes. Aggregate data on national economy and manufacturing sector were collected from National Account Statistics accessed from EPW Research Foundation database. The analysis of the study suggested that the growth of GDP of Indian economy and manufacturing sector (both registered and unregistered) stepped up notably in the post-liberalisation period as compared to those in the pre-liberalisation era indicating the positive impact of the liberalisation measures on the economy in general and manufacturing sector in particular. The capital formation of the manufacturing sector was also positively influenced by the pro-market reforms policies initiated in the late 1980s and in the early 1990s. The productivity of the manufacturing sector improved in the post-liberalisation era as compared to the pre-reform period as signified by the decreasing capital output ratio in the post-reform regime.*

**Keywords:** *New Economic Policy, GDP, Capital Formation, Liberalisation, Regulation, Industry*

## INTRODUCTION

The manufacturing sector is generally considered as the backbone and the driving force for any economy. For the creation of adequate employment opportunities, reducing regional imbalances and accelerating as well as sustaining the economic growth, the role of manufacturing sector can never be undermined. India since independence understood the ever increasing role of the manufacturing sector in realising the dreams of setting up the 'socialistic pattern of the society'. Thus after gaining independence in 1947, a number of industrial policies were taken up to foster the growth of manufacturing sector in India. Out of those, two important policies which were taken up immediately after the independence were Industrial Policy Resolution of 1948

and Industrial Policy Resolution of 1956. These two policy resolutions helped the development of the industries to a great extent, but on account of the excessive regulatory interference, red tapes, protocols, cap on foreign investment, adverse tax law provisions, and excessive government control the anticipated growth rate could not be achieved. Thus, the first phase of liberalisation measures which were initiated in late 1980s resulted into an unsustainable growth story led by huge foreign borrowing that ultimately culminated into the great exchange rate crisis. In late 1980s, India experienced moderate rate of growth with large macroeconomic imbalances as indicated by huge fiscal deficit to GDP ratio, improper debt service ratio and augmented foreign commercial debt (Mitra & Ural, 2008). The problem got intensified with the serious hike in crude oil

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prices due to gulf war. As a consequence, Indian economy was faced with a foreign exchange crisis. IMF came to rescue Indian economy with stringent conditionalities to alter the existing economic policies and implement the pending economic reforms measures. In combating with such a crisis the New Economic Policy was promulgated on 24<sup>th</sup> July, 1991 following the Structural Adjustment Programme initiated by the Government of India at the behest of IMF. Such a bold economic policy was highly needed at that point of time to unshackle the Indian economy so as to enable it to have sustainable growth. Much of the government regulations were done away with by abolishing the MRTP Act, FERA Act etc. The adoption of the New Economic Policy was also criticised on many fronts because it was considered as the pledging of economic sovereignty to a foreign institution. But whatever may be the criticism, this economic policy was much awaited and much needed for projecting our bright presence in the economic map of the world. Thus the underlying intuition of the Economic Policy of 1991 was to expedite the pace of economic growth in our country, ensuring effective utilisation of the resources and thereby attaining a higher level of productivity and ultimately enabling our economy to compete globally. The Economic Policy of 1991 was of historical importance because this policy was 'pro market' in characteristics unlike the earlier 'pro-business' economic policies of 1980s (Rodrik & Subramanian, 2005).

## TRANSITION FROM REGULATION TO DEREGULATION OF INDIAN INDUSTRIES

### Period of Regulation (1947-1980)

The entire period in which the different economic and industrial policy decisions were taken can broadly be divided into two phases. The first one is the phase of regulation which represents the period from 1947-1980 whereas the post-1980 period can be earmarked as the era of deregulation. On gaining independence, India walked into the path to boost the economic growth by adopting central planning mechanism and framing different industrial policies. The centrepiece of industrial development was different industrial policy measures and regulations to ensure balanced development. The first bold step in this direction was taken up by publishing the Industrial Policy in 1948 and later on in 1956. The crux of these policies were control and regulation of the private sector, heavy reliance on the state owned enterprises, protecting the labour forces, and encouraging the small scale and cottage industries. The control and regulation was multiplied with the introduction of industrial licensing vide Industries Development and

Regulation Act in 1951 (Aghion *et al.*, 2006). The industrial licensing prohibited the private sector enterprises from expanding their existing business operations, from creating any new business unit and also from introducing any new product line also. The underlying assumptions behind such a regulation were well pointed out by Kochhar *et al.*, (2006) and these are as follows:

- Since independence, India intended to achieve self-sufficiency in order to become free from excessive external reliance. Rapid industrialisation was aimed at by developing industries which would produce capital goods to achieve import substitution.
- Extreme form of control mechanism was adopted as evidenced from the Industrial Policy Resolutions taken up in 1948, 1956 and the License Raj. Most of the industries were reserved for the public sector. The basic reason for introducing such a control mechanism was to dilute the possibility of concentration of economic power in the hands of few private entrepreneurs, to reduce the inequality of income and wealth and to restore regional imbalance.

The result of such an effort of industrial development in a regulated environment was a peculiar pattern of development (Chari, 2007). The industrial performance till 1970 was moderate followed by a serious decline in 1970s and 1980s (Bosworth, Collins, & Virmani, 2007). The Total Factor Productivity (TFP) during the above periods grew negatively (Chari, 2007) and there was no significant break in GDP growth during the period from 1951-52 to 1979-1980 (Virmani, 2006). The GDP growth rate in India stepped up from 2.6% during 1965-66 to 1979-80, to 5.6% during 1980-81 to 1991-92 (Virmani, 2006). Wallack (2003) found out a shift in the growth rate between 1973 and 1987. But since the variance of 1980, growth was statistically notable, thus was fragile in nature. The growth during late 1980s was primarily led by fiscal expansion which in turn was made possible by huge external and internal borrowings that eventually pushed the economy into the exchange rate crisis of 1991 (Joshi & Little, 1996; Panagariya, 2004).

### Period of Deregulation (1980 onwards)

The period from independence to late 1970's was characterised by central planning and regulation in the form of industrial licensing (Soo, 2006). The slow and fragile rate of growth forced the transition to a deregulated environment rather a 'pro-market' environment. The effect of 'pro-market' business measures is well explained by Fuzita (1994). In accordance with Fuzita (1994) the liberalisation initiatives help in achieving increased productivity and economies of scale by the introduction of new technology as generated by foreign fund inflow, indigenous R&D activities and technology embodied in imported goods.

Since 1970s, it was well realised that the anticipated growth could not be achieved because of the licensing policy. Too much government control, complex bureaucratic process, time taking process of license issuance, business lobbying etc. forced the government to reconsider the existing system of control imposed via licensing policy. Due to failure of the regulation (Act) to bring about the expected industrial growth, the Government's interventionist attitude begun to alter initially in 1980s and later on in 1990s in a large scale (Soo, 2008). After three decades of excessive control in 1985 some industries were initially delicensed and later on during 1990s the process of deregulation was more intensified. In the New Economic policy of 1991, serious deregulation measures were initiated and following the policy during the period 1991 to 1997, 268 types of different industries were freed from the labyrinth licensing requirement. Only a very few industries which are of national and strategic importance were kept under strict regulation. One of the important steps taken in this direction was the abolition of licensing which in the opinion of many was one of the prominent reasons of low growth till 1980s (Kochhar *et al.*, 2006).

**Table 1: Number of Industries Deregulated from 1985 to 1997**

Year	Number of industries deregulated
1985	27
1989	29
1991	86
1993	88
1997	94

Source: Based on Gupta *et al.* (2008)

Since 1980 there is an existence of tilt in the economic growth led by economic reform measure undertaken in the context of Indian economy (Kochhar *et al.*, 2006). The first phase of liberalisation or reform measures were initiated by the then Prime Minister Rajiv Gandhi in 1985-1986 by dismantling the requirement of industrial licensing for 25 broad industry groups for the purpose of capacity enhancement and product diversification along with reduction of import tariff (Soo, 2006). More specifically some of the important characteristics of the 1980s reforms measure pointed out by Kochhar *et al.*, (2006) were:

- Import liberalisation in respect of capital and intermediate goods.
- Tax incentive for export of goods and services.
- More liberal availability of foreign exchange and credit.
- Delicensing of broad industries
- Deregulation of prices of important intermediate goods.

But a more concentrated and intensified set of reform initiatives were experienced in 1990s following the exchange rate crisis. The important pro-market reform initiatives undertaken by the Indian government in July, 1991 included the abolition of licensing requirement and other non-tariff restrictions on the imports of intermediate and capital goods, the amplification and simplification of export incentives, the withdrawal of various export hurdles, the abolition of the trade monopolies of the Government trading agencies, the simplification of the trade regime, the decrease of tariff levels and their dispersion and the total convertibility of the domestic currency in respect of foreign exchange transactions (Mitra & Ural, 2008). Strong liberalisation measures were initiated during 1980-1990 had significant implications towards the Indian economy. The liberalisation measures helped Indian economy to increase the real growth of GDP from the 'Hindu rate of growth'<sup>1</sup> of 3.5% during 1950-1980 to 5.7% in 1980s and finally to 6.2% in 1990s on an average (Soo, 2008). The service sector registered a significant improvement in the productivity growth following the liberalisation (Bosworth *et al.*, 2007). Moreover, the variance of GDP growth rate during 1970s was 15.8 which reduced to 4.6 in 1980s and to 1.5 in 1990s. Thus, the growth of GDP during the post-reform period was more stable as indicated by low variance unlike that of the pre-reform regime (Panagariya, 2004). And this was primarily achieved through the removal of stringent restrictions on the entrepreneurs Kotwal *et al.*, (2011). But, this sudden transformation in the economy was not propelled by the "Asian Model" of growth that is it was not led by the savings, not by the exports of manufactured products, not by huge foreign fund flow, even not by introducing any industry specific policy but due to the tremendous growth of service sector (Kotwal *et al.*, 2011).

## OBJECTIVES OF THE STUDY

- I. To evaluate the growth of the Indian economy and the contribution of the manufacturing sector under the alternative policy regimes.
- II. To determine the implications of the liberalisation measures on the capital formation of the manufacturing sector.
- III. To look into the trend of the Productivity (Capital Output Ratio) of the Indian manufacturing sector under different policy regimes.

## DATA AND METHODOLOGY

The present study is predominantly analytical in nature. For the purpose of this study the data on national economy, GDP,

1 The term 'Hindu rate of growth' was coined by Professor Rajkrishna, an Indian economist, in 1978 to characterise the slow growth and to explain it against the backdrop of socialistic economic policies.

GDP of manufacturing sector, capital output ratio, gross fixed capital formation etc. for the period from 1950-51 to 2011-12 has been collected from National Accounts Statistics obtained from EPW Research Foundation database. In order to assess the growth and performance of the Indian economy and the manufacturing sector the growth rate has been calculated under alternative policy regimes. Traditionally the semi-log model or log-linear model is popularly used by the researchers to compute compounded annual growth rate. Thus, for the purpose of calculating growth rates semi-log model is also used here. The log-linear or semi-log model is expressed as:

$$\ln y = \alpha + \beta x_t$$

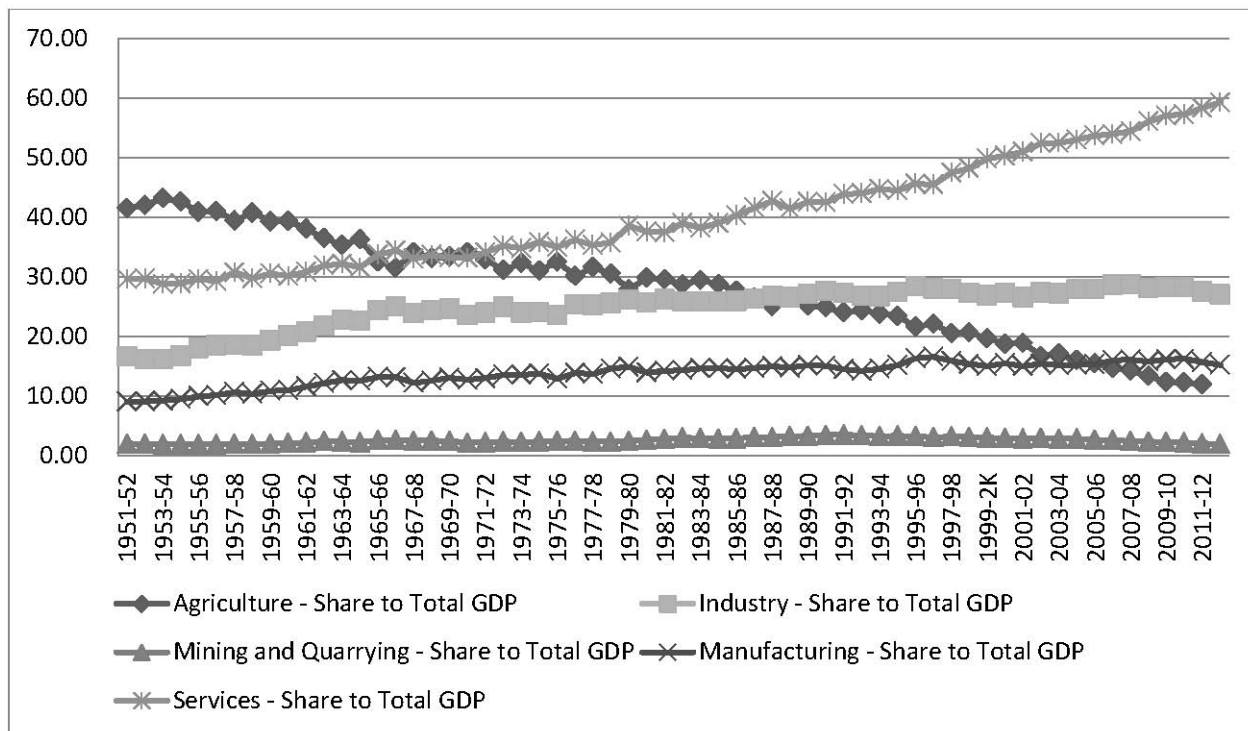
where,  $\ln y$  is the natural logarithm of the variable,  $\alpha$  is the intercept,  $t$  is the time period ( $X_t = 1, 2, 3 \dots n$ ),  $\beta$  is the relative change:

$$\beta = \frac{\delta(\ln y)}{\delta(x)} = \frac{(1)}{(y)} \times \frac{\delta(y)}{\delta(x)}$$

In the above model dependent variable is the natural logarithm of  $y$  and the independent one is time variable, which will vary from 1 to  $n$ . In this model the slope coefficient i.e.  $\beta$  measures the relative change in  $y$  for the absolute change in the value of the dependent variable  $t$  i.e. time. If the calculated value of  $\beta$  is multiplied by 100, it will give the percentage change or the growth rate in  $y$  for an absolute change in  $x$ . The basic difference of the semi-log model with the liner trend model is that the former determines the relative growth while the later gives us the absolute growth. Thus, the semi-log model is widely used to ascertain the relative change in a given variable over a period of time.

## FINDINGS AND ANALYSIS

### Sectoral Contribution to the GDP



**Fig. 1: Change in Sectoral Contribution of Industry, Manufacturing & Services in GDP**

In the last 15 years, Indian economy has experienced phenomenal growth in terms of the GDP. But this growth in GDP has been predominantly driven by the service sector growth. From Fig. 1 it can be observed that the share of agriculture in the GDP has dramatically reduced over the time period. The mining and quarrying sector has been able to maintain a steady contribution to the GDP. The share of industry in general and manufacturing sector in particular

in the GDP has increased remarkably which is definitely a positive sign for the Indian economy as a whole. But the prime reason for such an exceptional growth of GDP was the exponential growth in the service sector as evidenced from Fig. 1.

Fig. 2 provides the graphical representation of the year on year growth of the GDP, industry as a whole, manufacturing sector and the service sector. The analysis of Fig. 2 showed

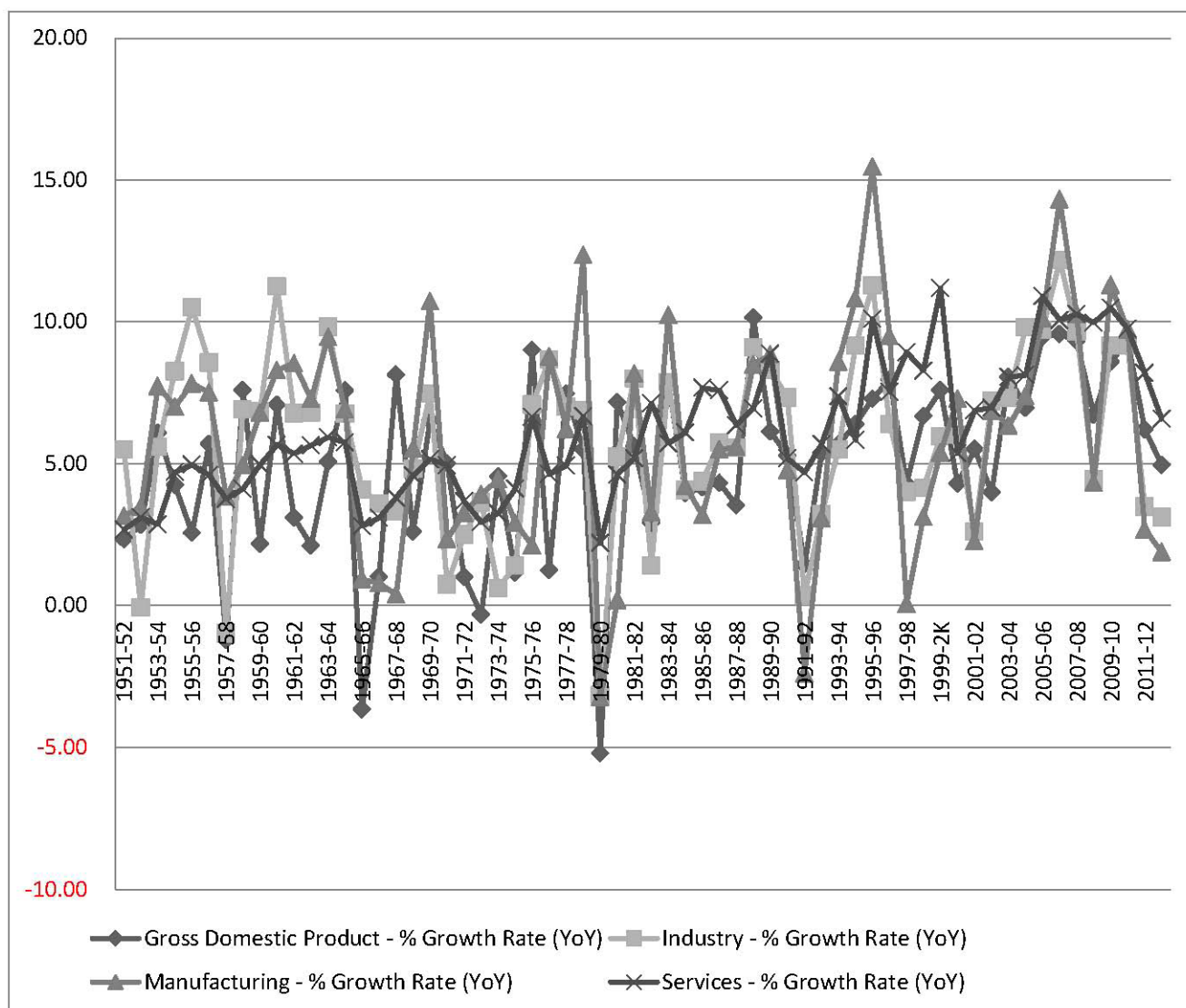
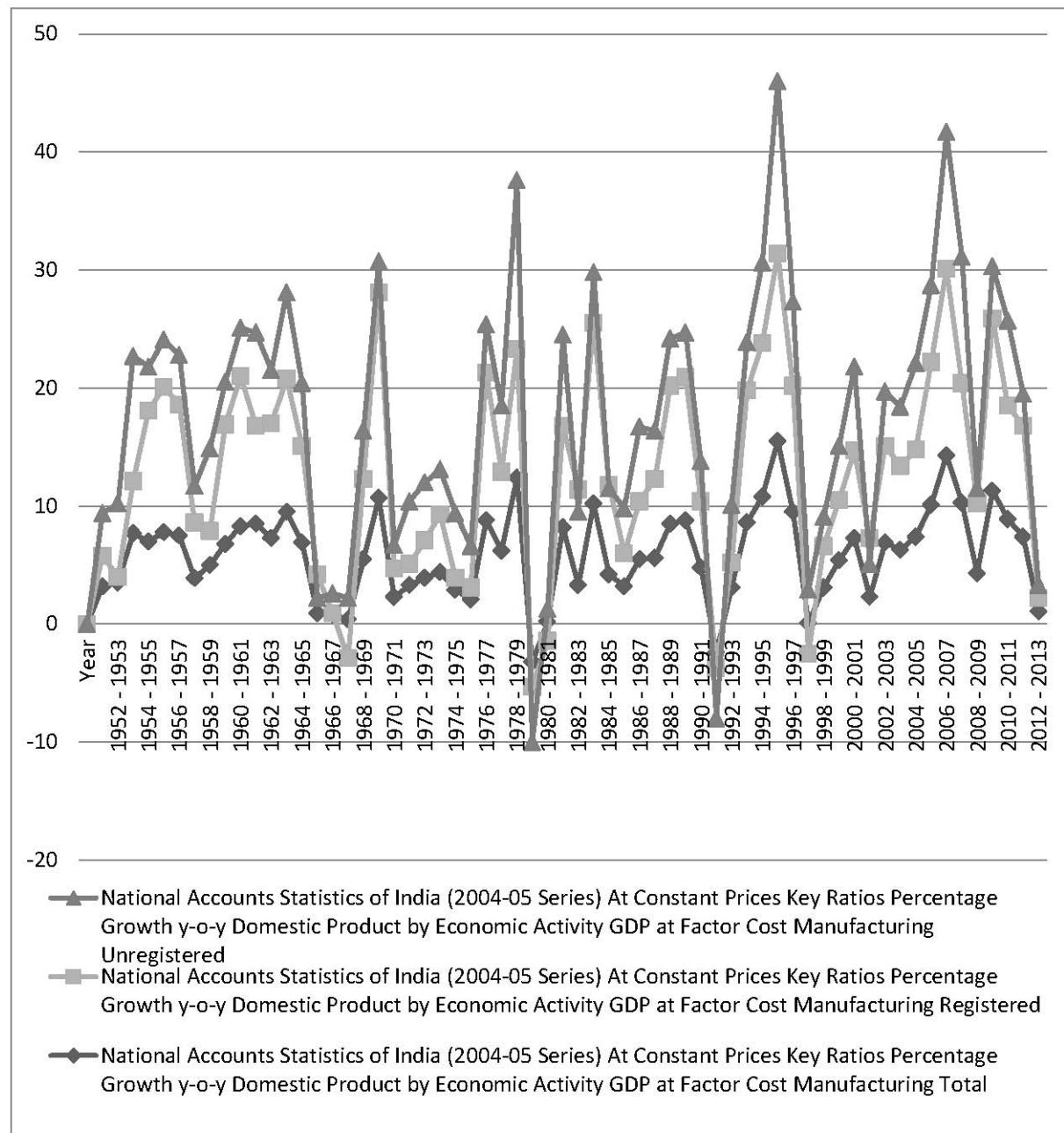


Fig. 2: Sectoral Year on Year growth of GDP, Industry, Manufacturing and services

that the rate of growth of GDP was low till 1980s. In 1957-58, 1965-66, and 1979-80 the growth of GDP was negative. The economic reform measures undertaken during late 1980s and later on during 1990-91 helped the GDP to grow at a very good pace. The growth of manufacturing sector was almost in tune with the GDP growth rate during the period of study. Strong reservation policies and industrial licensing policy restricted the manufacturing sector and industry to grow at a rapid pace till late 1980s. With the pro-market economic reform measures undertaken during 1980s and 1990s the manufacturing sector and the industry

experienced a significant growth. In 1979-80 and 1991-92 the manufacturing sector had negative growth and the industry growth was also got adversely affected. If we look at the year on year growth rates of manufacturing, industry, and GDP as a whole, it can easily be identified that due to the exchange rate crisis in 1990-91, East Asian crisis of 1997-98, and Economic Depression of 2008-09 all these sectors suffered tremendously. But the service sector growth remained relatively unaffected during these crunch economic times, showing the inherent strength of this sector.



**Fig. 3: Year on Year Growth of Manufacturing (registered and unregistered)**

In Fig. 3 an effort has been made to project the year-on-year growth of Indian manufacturing sector in general and registered and unregistered sectors in particular. It is evident from the graphical representation as shown in Fig. 3 that the Indian manufacturing sector grew steadily during the period of study but in 1967-1968 and 1982-1983 it declined significantly. In the wake of East Asian crisis

during 1997-1998 and during the economic meltdown of 2008-09 the growth of overall manufacturing sector reduced remarkably. In a similar way, the registered and unregistered manufacturing sector growth also declined steeply in the same years. But the reduction of the growth rates of the unregistered manufacturing sector was more than that in the registered manufacturing sector during the same periods.

**Table 2: Growth Rate of GDP and Manufacturing Sector in different Planning Periods**

Plan Period	Year	Growth Rate of Manufacturing Sector			
		GDP	Aggregate	Registered	Unregistered
1 <sup>st</sup> plan	1951-1956	4.09**	6.46**	6.86**	6.10**
2 <sup>nd</sup> plan	1956-1961	3.97**	5.77**	7.05**	4.50**
3 <sup>rd</sup> plan	1961-1966	3.35*	6.31**	8.10**	4.14**
4 <sup>th</sup> plan	1969-1974	2.07*	3.45**	2.91**	4.14**
5 <sup>th</sup> plan	1974-1979	5.33**	7.08**	7.75**	6.19**
6 <sup>th</sup> plan	1980-1985	5.00**	6.29**	9.71**	2.11
7 <sup>th</sup> plan	1985-1990	5.98**	6.85**	8.51**	4.35**
8 <sup>th</sup> plan	1992-1997	6.61**	10.86**	12.28**	8.25**
9 <sup>th</sup> plan	1997-2002	5.87**	4.75**	5.29**	3.49*
10 <sup>th</sup> plan	2002-2007	8.12**	8.93**	9.86**	7.18**
11 <sup>th</sup> plan	2007-2012	7.63**	8.04**	9.78**	4.19**
Entire period		4.66**	5.45**	6.35**	4.17**

\*\*Significant at 1% level; \* Significant at 5% level

Source: Author's calculation based on National Accounts Statistics.

In Table 2, a modest effort was made to analyse the implications of the different policies that were taken up in different plan periods on the economic growth of India and the growth of registered and unregistered manufacturing sector in India and thereby identifying the planning period/s which were proved to be fruitful to the economy as a whole and manufacturing sector in particular. The growth rate as calculated in Table 2 revealed that during the first 4 plan periods the growth rates were not very much high for the manufacturing sector as well as for the economy. But since the 5<sup>th</sup> plan period there has been a dramatic shift in the growth rate of GDP and the growth rate of both the registered and unregistered manufacturing sectors. Such acceleration went up to register a GDP growth of 6.61% whereas the manufacturing growth rate touched maximum of 10.86% during 1992-1997 i.e. the 8<sup>th</sup> plan period as compared to all the previous plan periods. The 8<sup>th</sup> plan period which was immediately after the liberalisation measures taken up in 1991 helped the registered and unregistered manufacturing to grow at a rate of 12.28% and 8.25% respectively. In the 9<sup>th</sup> plan period the GDP growth rate, manufacturing growth rate reduced considerable. The basic reason of such a reduction of growth can be the 1997 East Asian Crisis. But after that in the subsequent plan periods the GDP and manufacturing sector grew steadily at about 7% to 8%. It is interesting to note that 2008-2009 global economic crisis which comes within the 11<sup>th</sup> plan period (2007-2012) could not affect the growth rate of the economy as well as the growth of manufacturing sector both registered and unregistered during the same period. If we look at the growth rate during the whole period i.e. from 1951 to 2012 then GDP has grown

by 4.66% which can be considered good and a significant growth was also noticed in case of registered manufacturing and unregistered manufacturing.

**Table 3: Growth rate of GDP and Manufacturing Sector in Pre and Post Reform Period**

Period	Growth Rate of Manufacturing Sector			
	GDP	Aggregate	Registered	Unregistered
Pre-reform period (1971-72 to 1991-92)	4.33**	4.96**	6.07**	3.53**
Post-reform period (1992-93 to 2012-13)	6.77**	7.08**	7.88**	5.48**

\*\*Significant at 1% level

Source: Author's Calculation based on National Accounts Statistics.

In Table 3 the impact of openness of the economy and the liberalisation measures was assessed on the growth rate of the GDP and manufacturing sector in total including both the registered and unregistered manufacturing sector. For the purpose of determining the impact of second generation reform measures, the comparison of the growth rates was made between the pre-liberalisation period (1971-72 to 1991-92) and post-liberalisation period (1992-93 to 2012-13). It can be observed from the analysis of Table 3 that the growth rate of the GDP, registered manufacturing and unregistered manufacturing sector augmented remarkably in

the post-liberalisation period. Thus, it can be said that the second generation reforms measures helped Indian economy to grow at a rapid pace along with the manufacturing sector, both registered and unregistered one. Thus, it can be concluded that the Indian economy and manufacturing sector responded positively towards the liberalisation measures initiated during late 1980's and early 1990's.

### Gross Fixed Capital Formation (GFCF) of Manufacturing Sector

Capital stock comprises all durable, reproducible, tangible, fixed goods that are used in the production of other goods and services and that last for more than one year (Hooley, 1967). It includes residential and non-residential structures, transport equipment, and machinery and other equipment but does not include non-reproducible assets such as natural forests, land and mineral deposits, intangible assets such as

patents, software and property rights, inventories of final products and intermediate goods, military. Capital stock of a nation gets accumulated over the years as a result of annual investments made by the corporate sector and government in different fixed assets (Van der Eng, 2009). The productive use of these assets contributes towards the generation of output and income in the economy. The capital stock is used in more than one accounting period in future production (Nomura, 2005). Thus, the formation of the fixed capital is of great significance to the economic development of any country. Higher the capital formation and better the use, higher will be the economic development of any country. Low rate of savings in a country and limited foreign direct investments results in low level of capital formation which adversely affects the level of economic development of a country (Van der Eng, 2009). It is of great importance to examine the growth of capital formation of Indian economy for different time periods to understand its implications to the economic growth.

**Table 4: Growth Rate of GFCF of Manufacturing Sector in Different Plans**

Plan Period	Year	Growth Rate of Manufacturing Sector		
		Aggregate	Registered	Unregistered
1 <sup>st</sup> plan	1951-1956	0.49	-2.12	55.94*
2 <sup>nd</sup> plan	1956-1961	6.01	7.42	-11.24
3 <sup>rd</sup> plan	1961-1966	15.52**	15.82**	11.99
4 <sup>th</sup> plan	1969-1974	0.69	0.25	2.23
5 <sup>th</sup> plan	1974-1979	6.10**	6.51*	4.88
6 <sup>th</sup> plan	1980-1985	11.29**	15.98**	-0.61
7 <sup>th</sup> plan	1985-1990	6.20*	3.52	12.27
8 <sup>th</sup> plan	1992-1997	18.11**	17.09**	21.70**
9 <sup>th</sup> plan	1997-2002	-8.30**	-9.76**	-2.46
10 <sup>th</sup> plan	2002-2007	23.83**	27.76**	11.88
11 <sup>th</sup> plan	2007-2012	3.88	3.21	7.85
Whole period		7.27**	6.96**	9.76**

\*\*Significant at 1% level; \*Significant at 5% level

Source: Author's calculation based on National Accounts Statistics.

In Table 4 the growth of GFCF of the manufacturing sector is presented. The analytical assessment of Table 4 clearly suggested that the growth of GFCF of the total manufacturing sector as a whole over different plan periods is a little bit erratic in nature. It is very much understandable that, immediately after the independence the investment in fixed assets was just begun and thus during first two plan period the growth rate of GFCF was low followed by a significant increase in the GFCF in the third plan period which was also found to be statistically notable at 1 percent. The GFCF growth in 5<sup>th</sup>, 7<sup>th</sup> and 11<sup>th</sup> plan periods were observed to be moderate. On the

contrary, the growth of GFCF in 6<sup>th</sup>, 8<sup>th</sup> and 10<sup>th</sup> plan periods were very high and were also statistically notable at 1%. The GFCF grew negatively during 9<sup>th</sup> plan period (1997-2002); perhaps such a negative growth of GFCF was due to the Asian Crisis during this period of time as triggered by low level savings and foreign investments. Interestingly during 11<sup>th</sup> plan period (2007-2012) also the growth of GFCF was very low, believed to be caused by the impact of Sub-prime crisis of 2008. But, during the whole period the average rate of growth of GFCF was 7.27% which was found to be statistically significant at one percent. Similarly, in respect of

the registered manufacturing also it can be seen that during 3<sup>rd</sup>, 6<sup>th</sup>, 8<sup>th</sup> and 10<sup>th</sup> the GFCF grew at a very high rate whereas the same for 2<sup>nd</sup> and 5<sup>th</sup> plan periods grew moderately. The growth of GFCF for registered manufacturing for 4<sup>th</sup>, 7<sup>th</sup> and 11<sup>th</sup> plan periods were very low and that in 1<sup>st</sup> and 9<sup>th</sup> plan periods were found to be negative. The GFCF of registered manufacturing also was adversely affected due to the Asian Crisis during 9<sup>th</sup> plan and subprime crisis during 11<sup>th</sup> plan. The 1<sup>st</sup> plan period earmarked a significantly high rate of growth of GFCF of unregistered manufacturing sector. The growth of GFCF in 3<sup>rd</sup>, 7<sup>th</sup>, 10<sup>th</sup> and 11<sup>th</sup> plan periods for the unregistered manufacturing was high, whereas the same during 4<sup>th</sup> and 5<sup>th</sup> plan periods was found to be lower than the whole period average. The GFCF of unregistered manufacturing sector grew negatively in 2<sup>nd</sup>, 6<sup>th</sup> and 9<sup>th</sup> plan periods. It is to be noted that the average rate of growth of GFCF of unregistered manufacturing (9.76%) was higher than that of registered manufacturing sector (6.96%) and manufacturing sector as a whole (7.27%) during the whole study period.

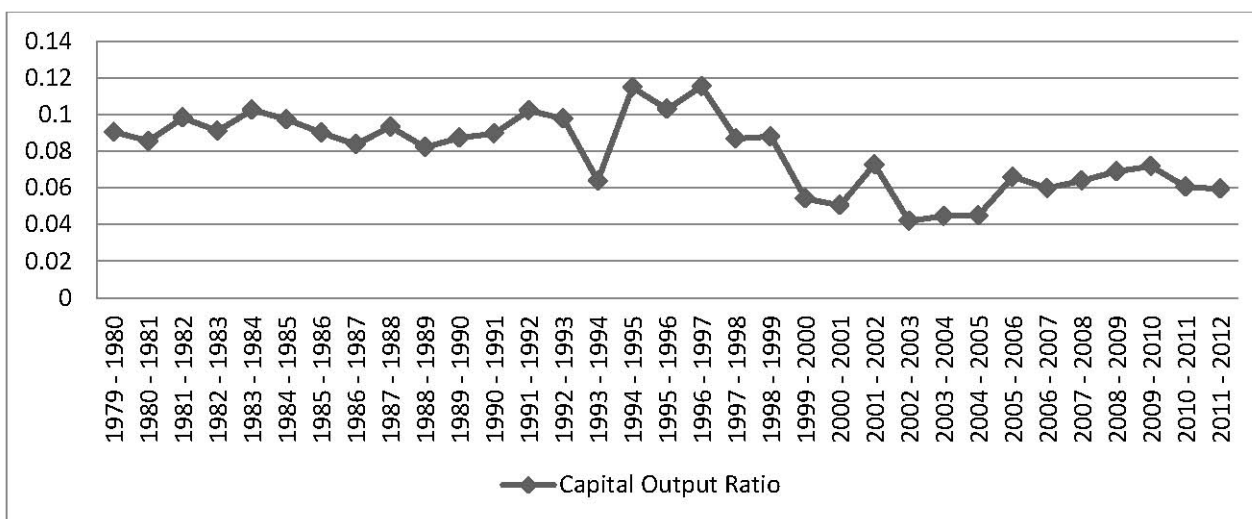
**Table 5: Growth rate of GFCF of Manufacturing Sector in Pre and Post Reform Period**

Period	Growth Rate of Manufacturing Sector		
	Aggregate	Registered	Unregistered
Pre-Reform period (1971-72 to 1991-92)	7.73**	7.36**	8.69**
Post-Reform period (1992-93 to 2012-13)	8.25**	8.61**	6.29**

\*\*Significant at 1% level

Source: Author’s calculation based on National Accounts Statistics

It is also interesting to note the impact of liberalisation on the GFCF. From the analysis of Table 3 it is clear that the growth rate of GFCF of the manufacturing sector as a whole and registered manufacturing sector were boosted due to the liberalisation measures initiated during early 1990s. But, the rate of growth of capital formation in unregistered manufacturing sector reduced in the post-liberalisation periods. Thus, the unregistered manufacturing may not have been very much benefitted from the liberalisation initiatives in respect of the capital formation.



**Fig. 4: Trend of Capital-Output Ratio:**

Capital Output Ratio (COR) or Capital Intensity (CI) suggests the capital required per unit of output. It is measured as a ratio between GFCF to Value of Output (Gupta, 2002). COR is an indicator of the rate of growth that can be achieved given a level of investment in an economy or in other words the amount of savings required to attain a given level of growth (Ghosh, 1956). An increase of COR posits the starting of economic development of an economy (Rostow, 1990). From the analysis of Figure 4 it is very much evident that the COR was more or less stable during the period from 1979-80 to 1990-91 which during 1992-93 registered a fall and afterwards followed by an increase during the period

from 1994-95 to 1996-97. Thereafter up to 2011-12 the COR reduced remarkably. COR basically dictates the efficiency with which the fixed capital is used to produce goods and services. Higher the value of COR indicates higher amount of fixed capital is required to produce units of output. On the other hand reduction of COR is also an indicator of the fact that the fixed capital is getting used more effectively and efficiently. In Indian scenario, if we look at the trend of CI, it can be concluded that during the post-liberalisation period the efficiency of utilisation of the fixed assets to generate output has improved as compared to that during the pre-reform period. The reasons of such a change in the pattern of

use of the fixed capital may be the free movement of factors of production, transfer or import of technology directly or indirectly, availability of the skilled manpower due to the upliftment of tertiary education etc. during the post-reform regime (Rajan, 2006).

## CONCLUSIONS

The journey of Indian economy from a restricted, controlled and centrally planned economy to a liberalised economy is ushered by a number of reform initiatives undertaken at different points of time. It would not be right to say that 1991 was the year of liberalisation because the process of liberalisation was started much way back during late 1980s. Keeping the debate aside, the analysis of the growth of GDP of Indian economy and manufacturing sector (both registered and unregistered) depicted that the growth of the economy and manufacturing sector stepped up notably during the post-reform period as compared to that in the pre-liberalisation era indicating the positive impact on the whole economy as well as on the manufacturing sector. The strength of the Indian manufacturing sector can never be undermined because of the fact that during the different post crises periods the manufacturing sector growth was not negatively affected. The sector was also very much insulated from the different crises such as Balance of Payment Crisis of 1991, East Asian Crisis of 1997, and Economic Meltdown of 2008. The capital formation of the manufacturing sector was also positively influenced by the pro-market reforms policies initiated in the late 1980s and in the 1990s. The productivity of the manufacturing sector improved more in the post-liberalisation era as compared to the pre-reform period as signified by the decreasing COR in the post-reform regime. Thus, it can be argued over the period of time by travelling from a controlled and regulated economy to a liberalised one, Indian industries specifically the manufacturing sector were very much benefited. The strength of the manufacturing sector and its productivity significantly improved on the front of pro-market economic and industrial policies. If India wants to be a responsible global player, climate of business and the infrastructure have also to be improved and the manufacturing sector has to be strengthened (Rajan, 2006a).

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