

# Performance of Manufacturing Economy in India: During the Last Four Decades

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## Abstract

The peninsular India is one of the fast growing economies in this world. The industrial sector of India is a Kaleidoscope, undergoing growth, structural change and policy renovations after independence. Against the backdrop, the present paper is an attempt to find out the growth spectrum of industrial sector of India in terms of output and employment. To assess the performance of these factors annual time series data have been drawn from the Annual Survey of Industries (ASI) published by the Central Statistical Organization, Government of India, for the period from 1973-74 to 2012-13. Further, necessary information has been collected from the Handbook of Statistics on Indian Economy, published by the Reserve Bank of India, and Economic Survey, published by Indian Ministry of Finance. To find out the effect of new economic policy in the growth of output and employment, the study period is classified into two folds, the pre-reform period covering the period from 1973-74 to 1990-91 and the post-reform, which includes the period from 1991-92 to 2012-13 and annual compound growth rate is applied to obtain prolific result. This study came out with the results that most of the industries attained a substantial growth in the pre-reform period in terms of output, but modern industries (except textiles) experienced perceptible growth in the post-reform period. Outrageously, most of the industries experienced a minuscule or negative growth in the post-reform period in the case of employment. In a developing country like India already suffering due to insufficient dose of physical and human capital, lack of research and development and over population, policy makers should frame suitable policies considering the consistent output and employment generation as both are directly correlated -with social welfare.

## Keywords

Industrial Development, Indian Industries, Employment, Output, Industrial Policy, Growth Performance, and Composition of Industries

## 1. Introduction

All over the world, it is generally accepted that industrial development is a prerequisite to attain paramount growth. Its contribution in the GDP, output, international trade, and modernization is substantial. The development experience of developing countries, like Afghanistan, Bangladesh, Chile, Dominica, Egypt, Pakistan, and Zimbabwe revealed that the industrial sector is used as a suitable instrument to break through the unceasing problems like, unemployment and poverty. From the history of the world development it is found that even the chief players like America, Japan, United

Kingdom, Canada and Australia, utilized the industrial sector as a suitable instrument in their developments. Leading publications of renowned industrial economists of this world like Hoffmen (1958), Kuznet (1966) and Chenery (1980), portrayed that the industrial development is sine-quo-non for economic development, Nicholas Kaldor (1976) in his famous research reported certain causal relationships between the growth of industrial productivity and GDP.

The establishment of industrial units has an appreciable impact on the poverty reduction and inequality (Lanjouw & Lanjouw, 2001), recent research by Szirmai and Verspagen (2010) using huge volume of panel data set of 90 countries for the period 1950–2005 concluded that there is a significant

relationship between the manufacturing and GDP, the same result was attained by Rodrik (2009). In India Chakravarty & Mitra (2009) concluded that the manufacturing sector is one of the major determinants of overall growth of a country. The social relevance of industrial development was highlighted by the World Bank (2004) noting that export-oriented industrialization, leads to attain higher degree of economic growth, creates high demand for labour, generate employment, and incomes and reduces poverty. Cornwall (1977), and Tregenna (2007) demonstrated there is an inter-sectoral linkage and spillover effect between manufacturing and other major sectors in an economy.

Right from the Industrial Revolution, industrial development performed as the primary engine of economic development, which was observed from the experience of Great Britain in the beginning and latter in Belgium, Switzerland, France, United States Germany, Russia and Japan Crafts (1977) Bergier (1983) Pollard (1990) Von Tunzelmann (1995). This growth hypothesis was empirically demonstrated by Fagerberg and Verspagen (1999) in East Asia and Latin America. Rodrik (2009) reported that transition into modern industrial activities acts as an engine of growth. Whereas, Katuria and Raj (2009) concluded that manufacturing is still functioning as an engine of growth. Lavopa and Szirmai (2012) in their comprehensive research support the engine of growth hypothesis for manufacturing sector using the data set of 92 countries over the period of 1960 – 2010. The predominant role played by the industrial development in the economic development and catch up was documented by Szirmai (2009). A group of studies by Lewis (1954), Fei and Ranis (1964) Chenery, Robinson, and Syrquin (1986) Fagerberg and Verspagen (1999), Timmer and Szirmai (2000), Van Ark and Timmer (2003), Temple and Woessman (2006), Rodrik (2009); and Timmer and de Vries (2009); found the significant role of industrial sector from the structural change bonus, the transfer of labour from the (low productivity) agriculture sector to (high productivity) industry sector offers an instantaneous boom in overall productivity and income per capita in the economies of studied nations.

The World Bank (1995) rightly remarked that the industrialization is viewed as almost synonymous with development, and it eventually leads to the enhancement of the per capita income and standard of living through spread effect (Chenery, 1980). Industrialization is an effort in which the underdeveloped countries place a major hope of finding a solution to their problems of insecurity, and over population and ending their newly realized backwardness in the modern world (Murray & Bryce, 1960). In addition to this, industrialization of an economy saves foreign exchange, raises output per head, remarkable reduction in cost and drudgery of production process.

India has been taking efforts to enhance the economy over the course of development. It revamped its restrictions in the policies; the new economic policy is noticeable among them. Reforms underwent in this policy in a nutshell are: (i) macro-economic stabilization actions (ii) major sectoral and

structural adjustment reforms (iii) special effort to split social costs (Chandrasekhar, (2003), Nagarajan (1994), and Sankaran & Rajkumar (2012). Further, near abolition of licensing, easing of the rigours of MRTP and FERA, minimization of number of industries for the public sector, mechanical approvals of foreign technology and for 51 percent foreign equity, approval of private investment in infrastructural sector, unrestricted locational policy for industry, free import for capital goods and tariff free for consumer goods, tax and transport subsidy for backward areas, de-regulation in small scale industrial units, and drastic liberal policy measures for attracting FDI, NRI investment and new technology are the sub segments of the policy change, (Balakrishnan & Babu, 2003).

## 2. Literature Review

Industrial sector plays a significant role in the economic development of any economy. Researchers in this world have been focusing their attention to assess the performance of industrial sector in the overall sustained development. In a comprehensive research, Shishido (1983) discovered that the two important factors viz., investment in industrial sector and a good educational system contributed to Japan's economic development in general and industrial sector, in particular. Using advance techniques Chun and Kim (2010) mentioned that a major reduction in the aggregate output growth volatility is attributed to the lowered co-movement in TFP growth. In their study concentrated on the effects of export on output and employment in the manufacturing sector of Malaysia Hassana, et al (2010) reported that there are positive relationships for manufacturing export, output and employment. Further, Palma (2003) observed that there was an appreciable improvement in employment and wages in Mexico due to industrial development. The impact of policy reform was assessed by Kangasharju and Pehkonen (2001), they identified that the substantial growth in output and employment over the course of development in the manufacturing of Finland was supported by policy reform. The major impact of globalization in the manufacturing sector was computed by Orbeta (2002) he found a considerable impact of export in the manufacturing employment in Philippines, which is mainly due to changes in export related policy. The effect of tricks and lockouts are assessed by Ling (2006) who found that the reduction of manufacturing output was mainly due to the lockout of firms during the economic crisis.

In the Indian context, the performance of industrial sector has been assessed by several researchers; Rangarajan (1982) articulated that the control implemented by the Indian government on manufacturing sector in the form of '*permit license raj*' (packed by restriction on output, investment and trade) resulted in poor growth during the 1970s. In a comprehensive research work, Ahluwalia (1991) examined the causes of increase in industrial productivity in India in the 1980s after experiencing past two decades of stagnation, and concluded that the proper implementation of planning

mechanism and infrastructural development had contributed to this healthy trend. Using ASI data in the Indian context, Nagaraj (1990) found that there was a moderate growth in output and down turn trend in employment generation during the study period. This trend was substantiated by the studies of Balakrishnan & Babu (2003) and Bhat (2013). The jobless growth in the industrial economy of India was also confirmed by Chandrasekhar (2003) and Virmani (2007) using time series data for their study periods.

In a recent study, Banga (2014) compared Indian scenario with that of the other nations in terms of the contribution of manufacturing sector to GDP. He observed that due to the slow growth of manufacturing sector, its contribution to GDP had been ranging between 14 and 16 per cent since the 1980s. But in the case of China, this was 34 per cent, Thailand 40 per cent and in Malaysia 24 per cent. Using Kinked exponential model of productivity analysis, Goldar (2015) concluded that the trend growth rate of manufacturing value added in India in the 1990s was not significantly higher than that of the 1980s, but was significantly higher in the 2000s. Applying the new double deflation method in the industrial sector of India, Dholakia (2015) found that the annual average growth rate of gross value added had reached to 8.2 per cent in 2012-13, compared to 6.2 per cent according to the single deflation method of Central Statistical Organization. Contradictory to it, Goldar (2015) found that the growth rate of real GVA in the Indian manufacturing sector was negative at 0.7 per cent in 2012-13, which increased to 5.3 per cent in 2013-14. In this regard, Goyal (2015) observed that the constraints on industrial growth were on the demand, rather than the supply-side. In his seminal work, Roy (2016) compared the growth performance of different sectors in the recent period and found that the growth of manufacturing GDP share was 6.94 per cent during 2000-01 to 2013-14. But during 2006-07 to 2013-14, the overall growth of GDP was higher than that of the manufacturing sector. The contribution of manufacturing sector in employment generation was 11.7 per cent in 2004-05, which increased to 12.6 percent in 2011-12. Meanwhile, the service sector achieved around 27 per cent during the same period. In sum, the reviewed studies ascertained the growth of industries at aggregate and disaggregate level and offered assorted results. While several studies examined the performance of the industrial sector, studies on the growth performance of the Indian industrial sector, particularly in the recent period, are limited.

### 3. Methods and Materials

In this study, an attempt is made to ascertain the growth performance manufacturing economy of India in terms of output and employment for forty one years from 1973-74 to 2012-13. The present study covered registered (under Indian Factory Act 1948) manufacturing industries. Annual time series data (available only upto 2013) have been collected from the *Annual Survey of Industries* (ASI) published by the Central Statistical Organization- one of the government's

leading organizations for data source. Further, Reserve Bank of India's publication- *Handbook of Statistics on Indian Economy*, and Ministry of Finance's publication- *Economic Survey* are other sources for this study. This study considered the total registered manufacturing sector of India at the two-digit level. Naturally, some industries in India are inter-related, hence these industries are grouped together deliberately (for instant Manufacture of Cotton Textiles, Manufacture of Wool, Silk and Man-made Fiber Textiles, and Manufacture of Jute and Other Vegetable Fiber Textiles (except cotton) are labeled as 'Textiles'. Whereas, Manufacture of Electrical Machinery, and Manufacture of Non-Electrical Machinery are considered as the group 'Machinery'). The National Industrial Classification (NIC) prepared by the government of India has pre-arranged the industries at the two-digit level into two folds, the first group is as until 1997-98 (the ASI data was organized according to the NIC 1987 classification), thereafter the NIC 1998 categorization has been followed. To obtain a consistent data set the present study has used a concordance categorization published by the Central Statistical Organization to reclassify the data for the years from 1998-99 to 2012-13 according to NIC1987 code. Finally, a rationalized and normalized data set is obtained. In these two variables (value of output and employment) the values of output are duly normalized against price fluctuation by using the appropriate wholesale price index (2005 base). To find out the effect of the new economic policy in the growth of output and employment the study period is purposely classified into two folds such as the pre-reform period (1973-74 to 1990-91) and the post-reform period (1991-02 to 2012-13). The finalized data are processed using annual compound growth.

$$ACGR = 1 - \lambda \left( \frac{\log \alpha - \log \beta}{N} \right) \times 100$$

Where  $\lambda$  denotes antilog,  $\log \alpha$  represents starting value,  $\log \beta$  is the end of the series, and N is total years.

### 4. Analysis and Discussion

Growth of output and employment of a nation, particularly in the industrial sector is the indication of the augmentation of economic welfare. Further, it leads to strengthen the international relation, export, favorable balance of payments, and paramount development. While considering the world current scenario, it is clear that the manufacturing output slowed down in the fourth quarter of 2015. Both industrialized and developing countries are experiencing a down turn trend in this period due to weak business investment and lethargic consumer demand. Moreover, as a result of slowdown in the industrial output of China and a sharp decline in Latin- American countries in the same sector, the growth of output in emerging industrial economics diminished (UNIDO, 2015). With respect to employment, according to the Industrial Development Report 2016 of UNIDO, in high income countries the contribution of

manufacturing sector towards employment has decreased considerably. Even in developing and emerging countries, due to capital intensity overall employment has been decreasing.

Indian economy experienced 7.8 per cent of annual average growth in industrial production during 1955-65, while manufacturing output increased at 7.6 per cent Nayyar (1978). The growth of output in the industrial economy of India is presented in Table 1, at aggregate and disaggregate level over the forty one years. It is observed that around 8 per cent growth has been attained by output in a year over the analyzed period. This growth rate slightly differs from pre-reform period to the post-reform period. It was 7.26 per cent per annum in the pre-reform period, but it has marginally increased to 7.91 per cent during the post-reform period. The special quality of these industries is that none of these

witnessed a negative growth during the analyzed period in terms of output. In the composition of these industries, there is a marked change in the rate of growth 10 out of 15 industries increased their growth rate from pre-reform period to the post-reform period. The extraordinary performance witnessed by the Wood and Wood Products in the post reform period is mainly due to environmental awareness, expansion of wooden product related to home and office appliances. The perceptible growth in the post reform period in output is a salient feature across the manufacturing sector with only five out of 15 groups registering a down turn trend, three of these witnessing only a marginal reduction. Nevertheless, clearly an inter-industry difference does exist in the rate of growth both in the pre and post reform periods in output in the industrial economy of India.

*Table 1. Annual compound growth rate of Output.*

| Industry                                    | 1973-74       | 1991-92       | 1973-74       |
|---|---------------|---------------|---------------|
|   | to<br>1990-91 | to<br>2012-13 | to<br>2012-13 |
| Food Products (20-21)                       | 5.71          | 6.38          | 6.10          |
| Beverages and Tobacco (22)                  | 5.02          | 7.27          | 6.30          |
| Textiles (23+24+25)                         | 4.91          | 3.68          | 4.34          |
| Textile Products (26)                       | 10.12         | 11.92         | 11.27         |
| Wood and Wood Products (27)                 | 2.61          | 13.77         | 8.22          |
| Paper and Paper Products (28)               | 5.13          | 6.23          | 5.75          |
| Leather and Leather Products (29)           | 6.71          | 6.02          | 6.31          |
| Chemicals and Chemical Products (30)        | 8.32          | 7.99          | 8.26          |
| Rubber, Plastic and Petroleum Products (31) | 9.64          | 14.48         | 12.06         |
| Non-Metallic Minerals (32)                  | 7.72          | 5.28          | 7.02          |
| Basic Metals and Alloys (33)                | 6.13          | 8.38          | 7.54          |
| Metal Products (34)                         | 4.01          | 5.88          | 5.15          |
| Machinery (35+36)                           | 8.13          | 5.72          | 6.88          |
| Transport Equipment and Parts (37)          | 7.61          | 11.75         | 9.56          |
| Other Manufacturing Industries (38)         | 11.17         | 18.39         | 15.19         |
| <i>All Manufacturing</i>                    | <i>7.01</i>   | <i>7.91</i>   | <i>7.54</i>   |

Source: Computed from ASI data

It is interesting to mention that the acceleration in output growth is found both at the aggregate level and for most industries. The computed rate of growth of output revealed that there are three industries such as textile products, rubber, plastic and petroleum products and other manufacturing industries experienced more than 10 per cent growth per year. Simpson (2001) mentioned that the textile products industry benefits from a large pool of skilled workers and experienced technical and managerial staff. Moreover, due to the expansion of both external and internal market, capital deepening, modernization and competition, the performance of industries producing textile products is appreciable over the study period. In the modern world, the usage of rubber and plastic in all the human activities has been increasing and also due to transport revolution and mechanization the petroleum and its related products experienced a perceptible growth in India, it is transparent from the growth rates of these industries. The amazing performance of the 'other manufacturing sector' is mainly due to the extraordinary performance made by its sub-sectors industries producing stationary articles, and play equipments including toys and

toy musical instruments.

In general, the circumstances of unemployment and underemployment are different forms of underutilization of human resource (Heggade, 1989). The continual unemployment in the modern sectors and unbridled underemployment in agricultural sector coupled with population explosion are indispensable challenges in third world countries. Owing to special qualities of manufacturing employment such as attractive salary, risk coverage, leisure, on the job training, health care, fixed duty time and other welfare measures, governments in developing countries are taking effort to generate employment opportunities by directing corporate and other sectors. The performance of different industries in terms of employment generation has been presented in table 2.

It is revealed that unlike output, the variable employment attained only around one per cent growth in the period under study. The manufacturing economy of India demonstrated 1.28 per cent growth (per annum) in the pre-reform period, but further worsened to 0.52 per cent in the post-reform period. It is worth noting that, shockingly there are five

industries showed negative growth in the post reform period, but it had been two industries in the pre-reform period. Among the industrial groups, only industries producing

Textile products achieved a substantial growth. At the same time, industries producing leather and leather products, and other manufacturing industries achieved a healthy growth.

*Table 2. Annual compound growth rate of Employment.*

| Industry                                    | 1973-74<br>to<br>1990-91 | 1991-92<br>to<br>2012-13 | 1973-74<br>to<br>2012-13 |
|---|--------------------------|--------------------------|--------------------------|
| FoodProducts(20-21)                         | 0.36                     | 0.77                     | 0.58                     |
| Beverages and Tobacco (22)                  | 4.22                     | 1.04                     | 2.67                     |
| Textiles (23+24+25)                         | -0.81                    | -2.09                    | -1.47                    |
| Textile Products (26)                       | 4.33                     | 10.73                    | 7.56                     |
| Wood and Wood Products (27)                 | -0.47                    | 1.01                     | 0.26                     |
| Paper and Paper Products (28)               | 0.85                     | -0.21                    | 0.27                     |
| Leather and Leather Products (29)           | 5.31                     | 2.50                     | 3.99                     |
| Chemicals and Chemical Products (30)        | 3.07                     | 1.96                     | 2.51                     |
| Rubber, Plastic and Petroleum Products (31) | 4.13                     | 2.72                     | 3.45                     |
| Non-Metallic Minerals (32)                  | 2.15                     | 0.75                     | 1.87                     |
| Basic Metals and Alloys (33)                | 2.16                     | -0.61                    | 0.81                     |
| Metal Products (34)                         | 1.17                     | 0.30                     | 0.70                     |
| Machinery (35+36)                           | 1.84                     | -0.75                    | 0.49                     |
| Transport Equipment and Parts (37)          | 1.91                     | -0.03                    | 0.91                     |
| Other Manufacturing Industries (38)         | 1.83                     | 6.07                     | 3.92                     |
| <b>All Manufacturing</b>                    | <b>1.28</b>              | <b>0.52</b>              | <b>0.93</b>              |

Source: Computed from ASI data

Moreover, few industries such as rubber, plastic and petroleum products, beverage and tobacco products, chemical and chemical products and non-metallic mineral showed progressing trend during the study period. It should be mentioned that albeit India has absolute cost advantage in textiles, it is not an appreciable place with respect to employment generation, Chandrasekhar (2003) and Papola (1994) stated that capital deepening and closure of mills due to environmental degradation are the causes for decline in employment in textiles industries. Whereas, according to Goldar (2000) job security regulations and World Bank (1989) acceleration in wages are the reasons for jobless growth. In its comprehensive works ILO (2005& 2009) found that transformation of Indian economy to international integration encompassed by mechanization, technological advancement and competition are attributed to poor employment growth. This result corroborates with Dasgupta and Singh (2005) Ghose (1994) and Ahluwalia (1991) research findings. Moreover, globalization with special reference to privatization, rent seeking and directivity unproductive profit seeking, lack of government's focus on employment generation, adoption of capital intensive techniques in manufacturing sector are also reasons for poor employment growth in the current scenario (Sankaran & Rajkumar, 2012).

## 5. Conclusion

The foregoing analysis- performance of manufacturing economy of India using firm level data for forty one years with respect to growth of output and employment witnessed some interesting results. The perceptible growth in the post-reform period in output is a salient feature across the manufacturing sector with only four out of fifteen industrial

groups registering a down turn trend, two of these amounting only to a marginal slowdown. Due to the expansion of both external and internal markets, internationalization, capital deepening, modernization and competition, the performance of industrial sector in India in terms of output is substantial and it has further reinforced itself in the post-reform period. However, obviously an inter-industry difference exists in the rate of growth of both output and employment. There was an almost across the board deceleration in employment growth. On the contrary, the growth rate of value of output increased after the policy reform in a majority of industries (and also at the aggregate level). Both at the aggregate and sub-sector levels there were poor performances in the growth of employment. This situation implies that the manufacturing economy of this nation has failed to fulfill its social responsibilities and potential labour force (World Bank, 1989, Ahluwalia, 1991, Lucas, 1988 and Naharajan, 1994). International trade theories proposed by Adam Smith (1776), David Ricardo (1817), and others encouraged free trade, but there is no consistency in the growth of output and significant impact in India from the policy reforms particularly in employment generation. Hence, policy makers in developing countries should frame suitable policies considering the consistent output and employment generation as both are directly correlated with social welfare. Such kind of strategies, which include human resource planning, government's focus on manufacturing sector and employment expansion will give a new life not only to India but also to all the developing countries.

## References

- [1] Ahluwalia, I. J. (1991). *Productivity and Growth in Indian Manufacturing*. Delhi, Oxford University Press.

- [2] Ashok, D. V. (1981). Factors Underlying the Slow Growth of Indian Industry. *Economic and Political Weekly*, 16 (12), 381-392.
- [3] Bagchi, A. K. (1975). Some Characteristics of Industrial Growth in India. *Economic and Political Weekly*, 10 (7), 157-164.
- [4] Banga, R. (2014). Trade Facilitation and 'Hollowing-out' of Indian Manufacturing. *Economic and Political Weekly*, 32 (40), 57-63.
- [5] Balakrishnan, P., & Suresh Babu, M. (2003). Growth and Distribution in Indian Industries in the Nineties. *Economic and Political Weekly*, 38, (8), 3997-4005.
- [6] Basu, K., & Mallick, S. (2008). When Does Growth Trickle Down to the Poor? The Indian Case. *Cambridge Journal of Economics*, 32, (3) 461-477.
- [7] Bhagwati, J. N., & Padma Desai. (1970). *India: Planning for Industrialization: Industrialization and Trade Policies Since 1951*, London, Oxford University Press.
- [8] Bhat, T. B. (2013). Growth and Structural Changes in Indian Industry. (Working Paper No. 2013/02). Retrieved from Institute for Studies in Industrial Development website: <http://isidev.nic.in/pdf/WP1302.pdf>.
- [9] Bolton, P. (1997). A Theory of Trickle-Down Growth and Development. *Review of Economic Studies*, 64 (2), 151-172.
- [10] Bosworth, B., S. Collins., & Virmani, A. (2007). Sources of Growth in the Indian Economy (Working paper No: 12901), Retrieved from National Bureau of Economic Research website: <http://www.nber.org/papers/w12901>.
- [11] Bryce, M. D. (1960). *Industrial Developed: A Guide for Accelerating Economic Growth.*, London, The McGraw Hill book company.
- [12] Center for Financial and Management Studies.(2009). Jobless Growth in Indian Manufacturing: A Kaldorian Approach: *Discussion Paper No: 99*, Alessandrini.
- [13] Chandrasekhar, C. P. (1988). Aspects of Growth and Structural Change in Indian Industry. *Economic and Political Weekly*, 23 (47), 2359-70.
- [14] Chandrasekhar, C. P. (2003). Neo-Liberal Reform and Industrial Growth: Towards Revival or Recession. *Social Scientist*, 31 (11/12), 3-22.
- [15] Chenery, H. B. (1980). Interaction between Industrialization and export. *American Economic Review*, 10 (2), 281-287.
- [16] Dasgupta, S., & Singh. A. (2005). Will Services Be the New Engine of Economic Growth in India? (Working Paper No. 310). Retrieved from Center for Business Research website: [http://www.cbr.cam.ac.uk/user\\_upload/centre-for-business-research-downloads/working-papers/wp310.pdf](http://www.cbr.cam.ac.uk/user_upload/centre-for-business-research-downloads/working-papers/wp310.pdf).
- [17] Davey, A. J. (1970). Industrial Development in Rajasthan and Madhya Pradesh, India. *Transactions of the Institute of British Geographers*, 49 (6), 183-199.
- [18] Echevarria, C. (1997). Changes in Sectoral Composition Associated with Economic Growth. *International Economic Review*, 38 (2), 431-452.
- [19] Ghose, A. K. (1994). Employment in Organized Manufacturing in India. *Indian Journal of Labour Economics*, 37 (2), 141-62.
- [20] Goldar, B. (2015). Growth in Gross Value Added of Indian Manufacturing: 2011-12 Series vs 2004-05 Series. *Economic and Political Weekly*, 12 (21), 10-13.
- [21] Goldar, B. (2015). Productivity in Indian Manufacturing (1999-2011) Accounting for Imported Materials Input. *Economic and Political Weekly*, 1 (35), 104-111.
- [22] Goyal, A. (2015). Measuring Indian Growth Why the Data Should Be Doubted Less. *Economic and Political Weekly*, 22, (32), 66-69.
- [23] Goldar, B. (2000). Employment Growth in Organized Manufacturing in India. *Economic and Political Weekly*, 35 (14), 1191-1195.
- [24] Ha, N. T. (2005). Catching -up Industrial Development of East Asian Economics and Its Application to Vietnam. *The Journal of Developing Areas*, 39 (1), 71-98.
- [25] Haffman, W. G. (1958). *The Growth of Industrial Economics*. Manchester, Manchester University Press.
- [26] Hahn, F. H., & Solow, R. (1997). *A Critical Essay on Macroeconomics*, Cambridge, Mass: MIT Press.
- [27] Hassana, M. K. H, Baharomb, A. H., & Khairunnisa, A. A. (2010). Output and Employment Generated in the Malaysian Manufacturing Sector: An Input-Output Analysis. *International Journal of Global Business*, 3 (1). 20-42.
- [28] Heggade, D. O. (1989). Employment Planning in Karnataka: Problems and Prospects. *Indian Journal of Industrial Relations*, 25 (2), 193-203.
- [29] Hyunbae, C & Kim, J. W. (2010). Declining output growth volatility: A sectoral decomposition. *Economics Letters*, 106 (3), 151-153.
- [30] ILO. (2005). World Employment Report 2004-05: Employment, Productivity and Poverty Reduction (Working Paper No: 272). Retrieved from International Labour Organization web site: [http://www.ilo.org/public/libdoc/ilo/P/09465/09465,282\\_004-2005%29272.pdf](http://www.ilo.org/public/libdoc/ilo/P/09465/09465,282_004-2005%29272.pdf).
- [31] ILO, (2009). The Fallout in Asia: Assessing Labour Market Impacts and National Policy Responses to the Global Financial Crisis (Working paper No: 291). Retrieved from ILO Regional Office for Asia and the Pacific website: [http://www.ilo.org/wcmsp5/groups/public/-asia/-org/-ro-bangkok/documents/meetingdocument/wcms\\_101730.pdf](http://www.ilo.org/wcmsp5/groups/public/-asia/-org/-ro-bangkok/documents/meetingdocument/wcms_101730.pdf)2009.
- [32] Iscan, T. B. (2004). Understanding Economic Growth and Economic Development. *Review of Income and Wealth*, 50 (4), 585-596.
- [33] Jain, L. C. (1993). Turnaround in Industrial Growth, Hasty Claims for Liberalization. *Economic and Political Weekly*, 8 (8/9), 2-11.
- [34] Kaldor, N. (1976). *Strategic Factors in Economic Development*. Ithaca, New York, Cornell University Press.
- [35] Kangasharju, A., & Pehkonen, J. (2001). Employment - Output Link in Finland: Evidence from Regional Data. *Finnish Economic Papers*, 14 (1), 21-25.
- [36] Kelkar, V. L., & Rajiv Kumar. (1990). Industrial Growth in the Eighties: Emerging Policy Issues. *Economic and Political Weekly*, 25 (4), 2019-222.

- [37] Krishna, K. L. (2008). Industrial Growth and Diversification. In Uma Kapila (Eds.), *Indian Economy Since Independence*, (pp. 341-352). New Delhi, Academic Foundation Press.
- [38] Kuznets, S. (1966). *Modern Economic Growth: Rate, Growth, Structure and Spread*. London. Yale University Press.
- [39] Ling, N. S. (2006). Statistics Singapore Newsletter. *Planning Division, Economic Development Board*, Singapore.
- [40] Nagaraj, R. (1990). Industrial Growth: Further Evidence and towards an Explanation and Issues. *Economic and Political Weekly*, 25 (41), 2310-2332.
- [41] Nagaraj, R. (1994). Employment and Wages in Manufacturing Industries; Trends, Hypothesis and Evidence. *Economic and Political Weekly*, 32 (52), 177-186.
- [42] Nayyar, D. (1978). Industrial Development in India: Some Reflections on Growth and Stagnation. *Economic and Political Weekly*, 13 (33), 1265-1269.
- [43] Nayyar, D. (1994). Industrial Development in India: Some Reflections on Growth and Stagnation. In Deepak Nayyar (Eds.), *Industrial Growth and Stagnation: The Debate in India*, (219-243). New York, Oxford University Press.
- [44] Papola, T. S. (1994). Structural Adjustment, Labour Market Flexibility and Employment. *Indian Journal of Labour Economics*, 37 (1), 3-16.
- [45] Raj, K. N. (1976). Growth and Stagnation in Indian Industrial Development. *Economic and Political Weekly*. 11 (7), 1987-89.
- [46] Rangarajan, C. (1982). Industrial Growth: Another Look. *Economic and Political Weekly*, 17 (14), 589-593.
- [47] Ravindra, H. D. (2015). Double Deflation Method and Growth of Manufacturing: A Comment. *Economic and Political Weekly*. 31 (41), 88-90.
- [48] Ricardo, D. (1817). *The Principles of Political Economy and Taxation*. New York. Dover Pub, Mineola.
- [49] Robert, E. B. L. (1988). India's Industrial Policy. In E. B. Robert Lucas & Gustav Papanek (Eds), *The Indian Economy: Recent Developments and Future Prospects* (pp. 215-230) Oxford University Press.
- [50] Roy. S. (2016). Faltering Manufacturing Growth and Employment: Is 'Making' the Answer?. *Economic and Political Weekly*. 21 (13), 35-42.
- [51] Shishido, T. (1984). Japanese Industrial Development and Policies for Science and Technology. *Science*, 219 (82), 259-264.
- [52] Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Vol. 1, London, W. Strahan.
- [53] Thangamuthu, C., & Sankaran. A. (2004). Industrial Sector Reforms: Tending Towards Inter Regional Convergence or Divergence? *Productivity*, 45 (45) 32-38.
- [54] UNIDO. (2011). Manufacturing Output and Real sector. *Top News Tags*, Trade News Wing, Under Commerce and Industry, International Business.
- [55] Virmani, A & Hashim, A. (2011). J-Curve of Productivity and Growth: Indian Manufacturing Post- Liberalization (Working Paper No: 11/163). Retrieved from International Monetary Fund website: <https://www.imf.org/external/pubs/ft/wp/2011/wp11163.pdf>.
- [56] World Bank, (1989). India: Poverty, Employment and Social Services: A World Bank Country Study. World Bank, Washington, DC.
- [57] World Bank, (1995). *Structural and Sectoral Adjustment - World Bank Experience, 1980 – 92*. A World Bank Operations Evaluation Study. Washington.