Examining Manufacturing Sector of South India-2008-2019

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Abstract

This paper seeks to analysis the growth and production function of manufacturing industries in southern states in India. The southern state is Tamil Nadu, Kerala, Karnataka and Andhra Pradesh. These states are country's economic engine and bastions of social progress. The average per capita income in the sates is there time that of Uttar Pradesh and five times Bihar's. Its share of net value added, share of employment and factories has increase vastly. The production of southern states played a dominant role in the year of 2000 onwards.

Keywords: Growth, Production function, Net value added, Workers.

Introduction

India's manufacturing sector could become an engine for economic growth and jobs—if it can specialize. Eleven high-potential value chains could more than double its manufacturing GDP in a few years. Industrial development unleashes dynamic and competitive economic performance which generates income and employment, facilitates international trade and increases resource efficiency, and is thus a major driver of poverty alleviation and shared prosperity. Although industrialization contributes to the universal objective of economic growth, its impact differs depending on the country's stage of development. In developed economies, industrial growth is reflected in achieving higher productivity, embracing new technologies, intelligent production processes and reducing the effects of industrial production on the environment and climate. For developing economies, industrialization implies structural transformation of the economy from traditional sectors such as agriculture and fishery to modern manufacturing industries fuelled by innovation and technology. Such an expansion of the manufacturing sector creates jobs, helps improve incomes and thus reduces poverty, introduces and promotes new technologies and produces essential goods and services for the market. World manufacturing production reached USD 13,543 billion (at constant 2010 prices) in 2018, reducing the global MVA growth rate from 3.8 per cent in 2017 to 3.5 per cent in 2018. This slowdown has primarily been attributed to the increase in trade and tariff barriers between the United States, China and the European Union, exposing the markets to a high level of uncertainty, limiting investments and future growth. The deceleration in production was observed in all major country groups. Industrialized economies continued to dominate global manufacturing production, however,

their share dropped from 67.7 per cent in 2007 to 55.7 per cent in 2017

India stands out as one such country: a potential manufacturing powerhouse that has yet to realize its promise. From fiscal year 2006 to fiscal year 2012, India's manufacturing-sector GDP grew by an average of 9.5 percent per year. Then, over the next six years, growth declined to 7.4 percent. In fiscal year 2020, manufacturing generated 17.4 percent of India's GDP, little more than the 15.3 percent it had contributed in 2000. (By comparison, Vietnam's manufacturing sector more than doubled its share of GDP during the same interval.) And in the past 13 years, India's manufacturing-sector share of employment increased by just one percentage point, Southern States.

The southern States of India present a unique model of development. They have become the country's economic engine and the bastions of social progress. The region attracts multinational IT (services) and automobile (manufacturing) firms while remaining the spice capital (agriculture) of the world. The average per capita income in the five southern States is three times that of Uttar Pradesh and about five times Bihar's. Beyond economic growth, the States have also undergone social progress as the status of women and Dalits today is better in the region. The gender ratio is more balanced in the South, the fertility rate is lower, and the region has been more successful in eliminating untouchability. The world needs to applaud this progress of South India. To understand the model of growth which is inclusive and people-centric one needs to recognize the trade-oriented and cosmopolitan history of South India. The region had bustling ports like Calicut and Cochin. It was also home to some of the largest cities of the world, including Madurai and Vijayanagar. These ports and cities attracted traders from around the world.

South India, which contributes 22 per cent to the country's GDP, will become a USD 700 billion economy in the next five years, and USD 1,200 billion by 2020, Commerce and Industry Minister Anand Sharma said today. Addressing a meeting of CEOs in Bangalore, Mr. Sharma said the southern states have been major driver of growth in the last decade. They have become centers of manufacturing industries like textiles, automobiles, defence, aerospace and pharmaceuticals. The aggregate gross domestic product of Tamil Nadu, Andhra Pradesh, Karnataka, Kerala and Puducherry at present is USD 300 billion. He said the Centre is working on new manufacturing policy, under which National Investment and Manufacturing Zones (NIMZS) are being planned as mega investment regions.

Objectives

- To study the nature and extent of industrial growth of southern states.
- To analyze the changes is structural variable.
- To fit the cobb-douglas production functions and estimate of return to scale.

Review of Literature

Barletta et al. (2020) stated that building sustainable manufacturing capabilities requires an organization's success. The development of the current manufacturing system is significant so that companies can take advantage of it as one of the potential factors

needed. Over time, much research developed a manufacturing system to achieve manufacturing excellence and challenge the future with assessing a manufacturing system. The assessment is needed to measure manufacturing performance with target-oriented and optimal achievement. Performance measurement methods are a common problem that must be solved. Specific studies regarding the current manufacturing system, development, and future research are needed to find benchmarks for achieving manufacturing excellence.

AnyanwuUchenna n, Kalu Alexandra o.u(2015), in this paper many studies have been done for measuring the performance of industries. Tamil nadu would be classified as industrially is a well-developed country. Yet a lot of efforts have been put into the industrial Production process. The five years plan the second objective is increasing industrial production. The annual growth rate of industrial production, mining, and quarrying 2.16 percent, manufacturing 1.94 percent, electricity 5.35 percent, and general industrial production 2.31 percent in the year 2016. That industrialization of truth is the catalyst of economic growth for many nations in the twentieth century can no longer be disputed. It has been a much-emphasized development strategy in Nigeria as in many other countries even see industrialization as providing the basic means of overcoming their economic backwardness. While the exact relationship between industrialization and economic development has been a controversial issue in the economic literature, not many economists doubt the capacity of the industry for rapid growth and in turning sharply the table of economic progress.

Mustafa ozturk, Yavuzagan(2017),the necessity of emphasizing the importance of industrial production for the sustainable growth and development of Tamil Nadu has been a topic of discussion in political and academic circles. The growth in industrial production (output) depends on the investment in productive sectors and the demand for the products. Along with internal demand, Tamil nadu tries to support its production sector base with the annual growth rate. The industrial production items occupy the greatest share of industrial production annual growth rate. The development of industrial production capabilities of the state is clearly based on the demand from inside and out. The effect of Turkey's export on its industrial production throughout the 2000s has analyzed. For this purpose, we developed a var model where industrial production index was the dependent variable and export, investment, and interest rate were independent variables. All independent variables were found to be significantly explaining industrial production.

Methodology

Cobb-Douglas Production Function

The original Cobb-Douglas production function, developed in the 1920s by economist Paul Douglas and mathematician Charles Cobb, describes the relationship between the quantity of output and two factors of production, physical capital and labor, as follows:

$Q=AK^{\alpha}L^{\beta}$ where $\alpha+\beta=1$ $Q=AK^{\alpha}L^{\beta}$ where $\alpha+\beta=1$

The capital, K, represents the Number of Factories for production, such as buildings, machinery, and equipment. The labor, L, represents the number of Employees, measured in person-hours. The exponent $\alpha\alpha$ is a value between 0 and 1 that measures the

responsiveness or **elasticity** of output with respect to capital.

Findings of the study

The number of employees of manufacturing sector of Southern states of India was estimated from the year 2008 to 2019. Result is been given in following Table-1.

Table -1

Number of Employee Growth Rate 2008-2019

Year	Andhrapradesh	Karnataka	Kerala	Tamilnadu
2008-09	53.83	70.77	56.41	55.74
2009-10	54.89	68.39	53.40	52.76
2010-11	39.58	56.80	47.37	43.22
2011-12	40.09	61.62	46.99	43.12
2012-13	26.44	56.63	44.83	43.46
2013-14	26.41	58.31	40.67	43.92
2014-15	26.48	59.56	40.21	45.97
2015-16	25.58	59.26	36.02	51.71
2016-17	28.13	62.03	32.47	53.84
2017-18	29.88	61.30	31.61	55.45
2018-19	30.63	61.09	35.75	55.41

Source: Estimated

From the above table (1) it can be identified that the growth rate for Andhra Pradesh was high in the year 2009-10 which was 54.89 and the lowest growth rate was attained in the year 2015-16 which was 25.58. For Karnataka the highest growth rate was in the year 2008-09 as the rate was 70.77 and lowest rate was seen in the year 2010-11 as the state had growth of 56.80 in case of Kerala the highest growth was at 56.41 in the year 2008-09 and lowest rate was in the year 2017-18 with rate of 31.61. For Tamil Nadu the highest rate was in the year 2008-09 with growth 55.74 and lowest growth rate was seen in the year 2011-2012 as the rate was 43.12.

The below Table-2 provides details on the growth rate of fixed capital from the year 2008-2019.

The growth rate of fixed capital from the year 2008-2019 was examined and the result is been given in Table -2

Table-2

Growth Rate of Fixed Capital From 2008-2019

Year	Andhra Pradesh	Karnataka	Kerala	Tamilnadu
2008-09	440.16	1025.85	202.68	374.35
2009-10	759.52	1128.47	212.49	491.61
2010-11	609.10	1013.67	220.66	401.56
2011-12	916.48	1151.15	219.90	436.40
2012-13	851.79	1235.01	262.36	507.86
2013-14	945.52	1381.93	328.51	724.53
2014-15	925.83	1345.08	400.95	584.29
2015-16	1029.41	1339.21	507.16	637.44

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2016-17	1146.87	1358.07	590.93	759.60
2017-18	1131.84	1406.92	568.26	734.49
2018-19	1127.61	1502.08	623.18	741.57

Source:Estimated

From the above table it can be identified that for the state Andhra Pradesh the highest growth was in the year 2017-2018 as the growth was 1146.87 and lowest growth rate was seen in the year 2008-09 as the rate was 440.16. For the state Karnataka the highest growth rate was in the year 2018-19 with the rate of 1502.08 and the lowest growth was in the year 2008-09 with the rate of 1025.08. for the state of Kerala the highest growth was seen in the year

2018-19 with the rate of 623.18 and lowest rate was in the year 2008-09 with the rate 202.68 and in case of Tamil Nadu the highest growth rate was in the year 2013-14 with the rate 724.53 and in the lowest rate was seen in the year 2008-09 as the rate was 374.35.

The net value added per factory was studied for the year 2008-19 and the result is been provided as follows in Table-3,

Table -3
Growth of Net Value Added Per Factory

Year	Andhrapradesh	Karnataka	Kerala	Tamilnadu
2008-09	209.85	503.28	131.31	152.03
2009-10	228.59	429.69	121.84	221.08
2010-11	219.81	381.09	126.27	195.38
2011-12	242.00	403.17	131.79	40188
2012-13	155.11	455.03	164.32	247.81
2013-14	118.51	457.04	188.72	233.33
2014-15	175.38	453.57	163.60	231.97
2015-16	190.94	495.38	210.69	291.98
2016-17	160.72	620.25	258.78	316.73
2017-18	217.00	645.21	246.73	362.60
2018-19	185.94	641.64	257.23	369.25

Source: Estimated

In case of Andhra Pradesh the highest growth was attained in the year 2009-10 as the rate was 228.59 and lowest rate was seen in the year 2013-14 with the rate of 118.51. The state Karnataka net value added per factory was seen to have highest growth in the year 2017-18 as the rate was 645.21 and lowest rate was in the year 2010-11 with the rate of 381.09. For the state Kerala the highest net value added was seen in the year 2016-17 with the growth of

258.78 and in the year 2009-10 the growth was seen to be having low with the rate of 121.84. in the state of Tamil Nadu the highest growth for the net value was seen in the year 2018-19 with the rate of 369.25 and lowest value was seen in the year 2010-11 with the growth of 195.38.

The growth of Fixed Capital for the year 2008-19 was studied in the current section and the result is been given in the following Table-4.

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Table-4
Growth Rate of Fixed capital per worker

Year	Andhrapradesh	Karnataka	Kerala	Tamilnadu
2008-09	138221.2	122503.3	21081.91	175421.4
2009-10	237339.1	140925.5	23506.4	230916.8
2010-11	404491.2	191350.3	32222.73	342354
2011-12	633392.6	214101.5	32900.92	374406.7
2012-13	494796.2	256305.4	41722.81	430806
2013-14	562781.7	286940.2	57609.85	616681.4
2014-15	559733.3	283808.9	72994.4	481388
2015-16	657545.1	293192.4	106724	460176.2
2016-17	662434.4	292173.1	140071.1	525160
2017-18	617385.3	310242.7	137504.6	500542.2
2018-19	616253.4	339045.8	134158	510344.5

Source: Estimated

For the state Andhra Pradesh the highest growth rate was seen in the year 2016-17 with rate 662434.4 and lowest rate was seen in the year 2008-09 with the range 138221.2. For the state Karnataka the highest rate was in the year 2018-19 and the rate was 339045.8 whereas the lowest rate was seen in the year 2008-09 where the rate was 122503.3. For the state of Kerala the highest growth was seen in the year 2016-17 with the rate of 140071.1 and lowest rate was found in the year 2009-10 and the rate was 23506.4. For the state Tamil Nadu the highest rate was found in the year 2013-14 with the rate 616681.4 and the lowest rate was seen in the year 2008-09 with the rate 175421.4.

The capital output ration of the manufacturing sector from the year 2008-2019 was studied in the following Table-5,

Table-5
Growth Rate of Capital output ratio

Year	Andhrapradesh	Karnataka	Kerala	Tamilnadu
2008-09	2.85	2.60	5.96	0.33
2009-10	1.80	2.42	12.38	0.35
2010-11	2.15	2.63	5.38	0.31
2011-12	1.54	2.56	7.22	0.26
2012-13	1.58	2.75	6.51	0.30
2013-14	1.77	2.66	5.59	0.40
2014-15	1.70	2.73	4.38	0.32
2015-16	1.39	2.52	3.19	0.34
2016-17	1.43	2.77	3.15	0.37
2017-18	1.69	2.78	3.76	0.32
2018-19	1.99	2.80	4.60	0.37

Source: Estimated

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For the state Andhra Pradesh the highest capital output was seen in the year 2008-09 with the rate 2.85 and lowest rate was in the year 2015-16 with the rate of 1.39. For the state Karnataka the highest capital output was in the year 2018-19 with the rate of 2.80 and the lowest rate was seen in the year 2009-10 with the rate 2.42. in case of Kerala the highest growth rate was in the year 2009-10 as the rate was 12.38 and lowest rate was seen in the year 2016-17 with the rate of 3.15 and for the state Tamil Nadu the highest capital output was in the year 2013-14 with the rate 0.40 and lowest rate was in the year 2011-12 and the rate was 0.26.

A Cob-Douglas production function was formulated to analysis the relationship between manufacturing industry and Number of Employees in manufacturing sector and total number of factories was estimated and the result is been given in the following Table-6.

Table-6

Cob-Douglas production function

	B	t	Sig.
(Constant)	-7.200	-3.092	.015**
noofemployees	1.096	2.189	.060***
factories	.397	3.655	.006*

Source: Estimated using SPSS

The Manufacturing Industry for the period 2008-2019 the output produced, number of employees and factories available was taken. During the total study period the industry was found to be operating at constant to return to scale as the values were found to be significant as the output was significant at 10 percent level of significance as p=0.15, number of employees was found to be statistically significant at 15 percent level of significance and factories available was statistically significant at one percent level of significance as p=0.006.

Conclusion

Due to India's recent excellent economic growth, many people are optimistic about the country's long-term growth prospects. It's interesting to note that the economy's growth trajectory has diverged significantly from that of China and other growing Asian nations. India's growth has not come from the industrial sector, in contrast to other significant Asian economies. Rather, the nation has shown a swift expansion of the service sector. 1 The sustainability of the service-led expansion in the Indian economy is a contentious issue, and many economists have emphasized the sector's inability to provide enough jobs in the nation, particularly for the labor force that is less educated. It's thought that the expansion of the manufacturing sector can result in development of economy.

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