DISTRIBUTION OF FIXED CAPITAL IN THE MANUFACTURING SECTOR: AN ANALYSIS OF ITS VARIABILITY ACROSS MAJOR INDIAN STATES

Sakshi Arora[1]

Abstract

Since, investment in the fixed capital is indispensable for sustaining the growth and development of the industrial sector, therefore the present study attempts to analyse the distribution of the amount of fixed capital in the manufacturing sector and assess its variability across the major Indian states. The time period under study covers forty years (1974-75 to 2013-14), which have been divided into four decades (1974-75 to 1983-84; 1984-85 to 1993-94; 1994-95 to 2003-04 and 2004-05 to 2013-14) to facilitate inter-temporal comparisons. The study has further ranked the regions on the basis of amount and variability of fixed capital for the said time period across seventeen major Indian states, which have been categorized into four geographical regions (northern, eastern, central & western and southern). The results indicate that when the regions were ranked on the basis of the amount of fixed capital, it was observed that the northern region registered the lowestern rank throughout each decade, whereas the central and western region dominated each decade by securing the top rank on an average. However, when the ranking was done on the basis of coefficient of variation (CV), the northern region registered the lowestern rank throughout all decades thereby reflecting least variability in the distribution of fixed capital.

Keywords: Fixed Capital, Major Indian States, Manufacturing Sector, Variability,

Subject Area under which the Research Article is included: **Economics/Social Sciences**

[1] Ph.D. Research Scholar (UGC-JRF), Department of Economics, Panjab University .

1. Introduction

It has been increasingly recognised that unless the manufacturing sector in India picks up strongly, it will be difficult to sustain rapid economic growth on one hand and provide productive employment opportunities to the increasing labour force on the other hand (Rani & Unni, 2004). History of all countries for example Singapore, Taiwan, China show that all of them have attained economic growth by focusing more on the manufacturing sector's output where most of the innovations are first generated. All these considerations have once again brought back the industrial policy into focus in the form of the National Manufacturing Policy released by the government of India on November 4, 2011, whereby it aimed at increasing the manufacturing sector's growth rate, create additional jobs, increase the technological depth, thereby increasing the global competitiveness of the Indian manufacturing sector (Ministry of Commerce and Industry, Government of India, 2011). It has been seen that the development in the manufacturing sector across different Indian states has not been uniform thereby, causing imbalances and differences. This also has been pointed out by various economists like Professor Hirschmann (Thirwall, 2011), who was of the viewpoint that regional inequalities are unavoidable due to differential conditions of growth that exist within them. Moreover, Professor Gunnar Myrdal in his theory of inequality has explained how the backwash effects overpower the spread effects causing regional disparities among different regions. These disparities in the industrial development across different regions can be measured using important variables like the distribution of fixed capital, number of workers, number of employees, size of the output, total number of factories, etc. Out of these variables, the present study focuses on the distribution of fixed capital, which is a significant input for the Industrial development in general and manufacturing sector growth in specific. Fixed capital can be defined as the marked down value of the fixed assets (such as land, plant & machinery, buildings, roadways, transport, schools, hospitals, etc.), which are owned by the factory and have a productive life span exceeding one year (Ministry of Statistics and Programme Implementation, 2014). Investment in the fixed capital is indispensable to kick-start the industrial production so that the economies of scale, both internal and external can be realised. In view of the significant role played by the fixed capital in sustaining the growth and development of the industrial sector, the present study attempts to analyse the distribution of the amount of fixed capital in the manufacturing sector and assess its variability across the major Indian states traversing a period of 40 years from 1974- 2014.

2. Objectives

The main objectives of the present study have been mentioned below.

1)   To study the pattern of the distribution of amount of fixed capital in the manufacturing sector across major Indian states and its regions thereof from 1974-75 to 2013-14.

2)   To study the decade wise incremental change in the distribution of the amount of fixed capital and its variability across the major Indian states during the aforementioned time period.

3)   To compare and rank the regions on the basis of amount and variability of fixed capital for the time period ranging from 1974-75 to 2013-14.

3. Data and Methodology

The present study is based on the secondary data source, where the data on the distribution of fixed capital has been procured from the reports of Annual Survey of Industries (ASI), which is maintained and compiled by Central Statistical Office (CSO), Ministry of Statistics and Programme Implementation (MOSPI). The time period under study covers forty years (1974-75 to 2013-14), which have been divided into four decades to facilitate inter-temporal comparisons. The study further has assessed the distribution of fixed capital across seventeen major Indian states, which have been categorized into the following four geographical regions (table 1) as per the classification given by RBI on its official website.

Table 1: Categorization of the Major Indian States into Geographical Zones

Northern Region	Haryana, Himachal Pradesh, Punjab, Rajasthan and Jammu & Kashmir
Eastern Region	Assam, Bihar, Odisha and Western Bengal
Central and Western Region	Gujarat, Maharashtra, Madhya Pradesh and Uttar Pradesh
Southern Region	Andhra Pradesh, Karnataka, Kerala and Tamil Nadu

Source: RBI

Since, the central and western region encompassed two states each, therefore these regions have been clubbed together in order to make the zones comparable and uniform for the purpose of analysis. The pattern of distribution of the amount of fixed capital in the manufacturing sector across major Indian states have been studied by calculating the mean values and coefficient of variation (CV) of fixed capital for each decade. Further, the decadal percentage change in the mean values of fixed capital and its CV has also been computed to study the incremental

variations in the distribution of fixed capital across the major Indian states. Further, the regions have also been ranked on the basis of amount and variability of fixed capital during the time period under study.

3. Analysis

Table 2: Distribution of Amount of Fixed Capital and its Variability across Major Indian States/Regions

Amount of fixed capital is measured in Rs. Lakhs

Decades Regions/States	1974-75 to 1983-84		1984-85 to 1993-94		1994-95 to 2003-04		2004-05 to 2013-14	
	Mean	CV	Mean	CV	Mean	CV	Mean	CV
Northern Region								
Haryana	79261.1	44.66	326819.1	42.71	1178561	23.86	4180942	51.40
Himachal Pradesh	20054.2	82.93	107553.7	36.13	349467.1	26.80	2578503	60.14
Punjab	122129.4	44.23	534567.6	48.78	1109631	24.90	2670524	39.30
Rajasthan	111777.6	48.56	433854.3	37.17	1393800	17.59	3827643	52.77
Jammu & Kashmir	7989.1	54.58	17252.3	74.62	44054	85.39	296427.1	53.57
Eastern Region								
Assam	27519.1	19.72	99572.3	41.03	376023.1	46.79	1041469	27.78
Bihar	304806.3	42.42	707137.1	28.47	1674021	10.32	4595673	54.69
Odisha	70726.1	40.26	458263.4	53.96	1322968	23.13	9171108	75.36
Western Bengal	191653.7	42.30	865841.5	62.53	2161881	23.55	5062156	45.22
Central & Western Region								
Gujarat	238886.4	47.34	1120256	56.45	6615670	27.46	21899150	46.37
Maharashtra	418257.5	46.39	1924354	53.02	6744289	17.33	19980836	44.98
Madhya Pradesh	189841.9	60.98	883920.6	46.46	2308052	8.63	8030131	68.09
Uttar Pradesh	279266.5	55.14	1278755	50.00	3711439	19.32	9533282	47.95
Southern Region								
Andhra	150621.6	49.24	1042163	71.87	2825510	12.23	10881039	63.50
Karnataka	113454.6	40.43	415871.5	43.89	2547129	36.81	9279191	48.77
Kerala	75431.6	34.72	237779.1	36.78	642688.7	17.40	1300907	40.36
Tamil Nadu	189896	41.14	988586	51.25	3632390	15.14	12639226	54.05

Source: Author's calculations based on the data procured from ASI reports (various years)

Table 2 depicts the distribution of the amount of fixed capital in absolute terms and its variability measured by the statistical tool; coefficient of variation (CV) of all the seventeen major Indian states and their respective geographical regions across the four decades ranging from 1974-75 − 1983-84 to 2004-05 − 2013-14. The decadal incremental effect of the amount of the change in the distribution of the amount of fixed capital and its variability across the major Indian states is presented in Table 3.

Table 3: Decade wise Incremental Change in the Distribution of the amount of Fixed Capital and its Variability across the Major Indian States

Regions/States	Change from 1974-75−1983-84 to 1984-85−1993-94		Change from 1984-85−1993-94 to 1994-95−2003-04		Change from 1994-95−2003-04 to 2004-05−2013-14	
	% Change in Mean	% Change in CV	% Change in Mean	% Change in CV	% Change in Mean	% Change in CV
Northern Region						
Haryana	312.33	-1.95	260.62	-18.85	254.75	27.54
Himachal Pradesh	436.32	-46.80	224.92	-9.33	637.84	33.34
Punjab	337.71	4.55	107.58	-23.88	140.67	14.40
Rajasthan	288.14	-11.39	221.26	-19.58	174.62	35.18
Jammu & Kashmir	115.95	20.03	155.35	10.77	572.87	-31.81
Eastern Region						
Assam	261.83	21.31	277.64	5.75	176.97	-19.00
Bihar	132.00	-13.95	136.73	-18.15	174.53	44.37
Odisha	547.94	13.70	188.69	-30.83	593.22	52.24
Western Bengal	351.77	20.23	149.69	-38.98	134.16	21.67
Central & Western Region						
Gujarat	368.95	9.11	490.55	-28.99	231.02	18.91
Maharashtra	360.09	6.63	250.47	-35.69	196.26	27.65
Madhya Pradesh	365.61	-14.52	161.12	-37.83	247.92	59.46
Uttar Pradesh	357.90	-5.15	190.24	-30.68	156.86	28.63
Southern Region						
Andhra Pradesh	591.91	22.63	171.12	-59.64	285.10	51.27
Karnataka	266.55	3.46	512.48	-7.08	264.30	11.96
Kerala	215.22	2.06	170.29	-19.38	102.42	22.96
Tamil Nadu	420.59	10.10	267.43	-36.11	247.96	38.92

Source: Author's calculations based on the data presented in table 2

Table 3 depicts the decade wise percentage change in the mean and CV of the distribution of the amount of fixed capital among the major Indian states. It is observed that in the Northern region, the maximum percentage growth in terms of mean values of fixed capital was recorded to be 637.84% for Himachal Pradesh in the decade 2004-05 to 2013-14 over the previous decade of 1994-95 to 2003-04 and the percentage change in the CV also reduced maximally for the same state in the decade 1984-85 to1993-94 in comparison to the previous decade 1974-75 to 1983-84 by 46.80%. In the eastern region, Odisha depicted the maximum percentage increase in the mean by 593.22% from 1994-95−2003-04 to 2004-05 − 2013-14, whereas Western Bengal showed a maximum decline in CV by 38.98% in the decade 1994-95 to 2003-04 over the preceding decade of 1984-85 to 1993-94. Furthermore, in the central and western region, Gujarat showed the maximum percentage increment in the mean from the decade 1984-85 −1993-94 to 1994-95−2003-04 by 490.55%, whereas Madhya Pradesh showed the maximum fall in the percentage change in the CV by 37.83% in the same period. Lastly, in the southern region, Andhra Pradesh showed the maximum percentage increase in the mean values of fixed capital in the decade 1984-85−1993-94 over the previous decade by 591.91% and also showed a major dip in the percentage change in the CV by 59.64% during the decade from 1984-85−1993-94 to 1994-95−2003-04.

Table 4: Ranking of the Regions on the basis of Amount and the Variability of Fixed Capital

Amount of fixed capital is measured in Rs. Lakhs

Regions	First Decade		Second Decade		Third Decade		Fourth Decade	
	1974-75 to 1983-84		1984-85 to 1993-94		1994-95 to 2003-04		2004-05 to 2013-14	
	Mean Wise	CV wise	Mean wise	CV wise	Mean wise	CV wise	Mean wise	CV wise
Northern Region	4 (341211.4)	4 [275]	4 (1420047)	4 [239.4]	4 (4075513)	4 [178.5]	4 (13554039)	4 [257.2]
Eastern Region	2 (594705.2)	1 [144.7]	3 (2130814)	1 [186]	3 (5534893)	3 [103.8]	3 (19870406)	1 [203.1]
Central & Western Region	1 (1126252)	3 [209.9]	1 (5207285)	3 [205.9]	1 (19379449)	1 [72.7]	1 (59443400)	3 [207.4]
Southern Region	3 (529403.8)	2 [165.5]	2 (2684400)	2 [203.8]	2 (9647717)	2 [81.6]	2 (34100363)	2 [206.7]

Note: i) Mean wise ranking indicates the ordering of the regions from maximum to lowest mean values

and CV wise ranking indicates the ordering of the regions from lowest to maximum values.

ii) Values presented in parentheses () denote mean values of fixed capital in Rs. Lakhs and

[   ]

denote the CV values.

Source: Author's calculations based on the data presented in table 2

   Table 4 depicts the ranking of different regions on the basis of mean and CV over each decade. According to the mean wise ranking, the northern region has maintained its position on the lowestern (4ᵗʰ) rank throughout each decade. The eastern region's position has deteriorated from the first decade to the second decade (from the 2ⁿᵈ rank to the 3ʳᵈ rank) and thereafter has continued to be stable at the same position, whereas the southern region has shown an improvement in the ranking from the 3ʳᵈ to the 2ⁿᵈ position during the same decadal years. The central and western region has maintained its dominance throughout each decade by securing the 1ˢᵗ rank. On the basis of CV wise ranking. The northern region has recorded the lowest rank (4ᵗʰ), thereby recording maximum value of CV throughout each decade, whereas the eastern region being on the 1ˢᵗ rank in the first and the second decade has slipped to the 3ʳᵈ rank and thereafter has redeemed itself to rank 1 in the fourth decade. The central & western region positioned on the 3ʳᵈ rank in the first and the second decade has improved and placed itself at top position and further has moved down in order to record the 3ʳᵈ rank in the fourth decade. Lastly, the southern region has remained stable at rank 2 throughout all the decades.

Conclusion

   In the present study an attempt has been made to analyse the distribution of the amount of fixed capital in the manufacturing sector and to assess its variability across the major Indian states and their respective geographical regions spanning a period of 40 years from 1974- 2014. The results indicate that in the northern region, the maximum percentage increase in fixed capital was observed for Himachal Pradesh in the decade 2004-05 to 2013-14 from the previous decade of 1994-95 to 2003-04 and the variability also has reduced maximally for the same state in the decade 1984-85 to 1993-94 over the previous decade. In the eastern region, Odisha recorded the

highest incremental change in the mean fixed capital from 1994-95−2003-04 in comparison to the preceding decade, whereas Western Bengal showed a maximum decline in variability during the decade 1994-95 to 2003-04 over the former decade. The state of Gujarat located in central and western region registered the highest percentage increase in the mean from 1984-85 −1993-94 to 1994-95−2003-04, whereas Madhya Pradesh showed the maximum fall in the percentage change in the CV during the same period. In the southern region, Andhra Pradesh showed the maximum percentage increase in the mean values of fixed capital in the decade 1984-85 to 1993-94 from the previous decade and also showed a major fall in the variability during the same period. When the regions were ranked on the basis of amount of fixed capital, it was observed that the northern region registered the lowest rank throughout each decade, whereas the central and western region dominated each decade by securing the top rank. However, when the regions were ranked on the basis of CV, the northern region registered the lowest rank in each decade, thereby reflecting least variability.

References

1]   Government of India, Ministry of Commerce and Industry. (2011). *National Manufacturing Policy.* Retrieved from Department of Industrial Policy and Promotion weblink http://dipp.nic.in/sites/default/files/po-ann3.pdf

2]   Government of India, Ministry of Statistics and Programme Implementation. (2014). *All about Annual Survey of Industries.* Retrieved from Ministry of Statistics and Programme Implementation weblink http://mospiold.nic.in/Mospi_New/upload/asi.

3]   Government of India, Ministry of Statistics and Programme Implementation. (2014). *Annual Survey of Industries reports (several years).* Retrieved from http://mospiold.nic.in.

4]   Rani, U., & Unni, Jeemol. (2004). Unorganised and organised manufacturing in India : Potential for employment   generating growth. *Economic and Political Weekly, 39(41),* 4568-4580.

5]   Reserve Bank of India. (2017). Retrieved from www.rbi.org.in.

6]   Thirwall, A. P. (2011). Economics of development theory and evidence. *Palgrave Macmillan, New York.*