

Occupational pattern of Chennai district of Tamil Nadu: An analysis of regional inequality

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Abstract

Objectives: The study is to analyse the relative economy structure of North Chennai in comparison to South Chennai in Tamil Nadu, India with respect to occupational characteristics. Therefore, the main aim of the study is to analyse the regional inequality in the occupational pattern of Chennai district and also to find out the occupational status of social groups in Chennai district.

Methods/Analysis: The study is based on secondary data sources by using the Primary Census Abstract for Chennai District of Tamil Nadu for the periods 1991, 2001 and 2011. The present investigation for proper comparison the occupational pattern of Chennai district grouped into three regions such as North, Central and South Chennai. For this purpose, Decomposition of the Gini Index is used to measure the occupational inequality between North region and South Region and also used the Sopher's Disparity Index to measure the occupational disparity between SCs and Non-SCs.

Findings: The study found that the rate of work participation of marginal workers, manufacturing and procession in the household industry was continuously high among the north region of Chennai as compared to other regions of Chennai district. It is revealed that there is a regional inequality between the North Chennai and South Chennai district in getting access to employment in tertiary and service sector occupation. This study also found that the majority of North Chennai people are engaged in the marginal occupation. Obviously, many of them belong to Scheduled caste with socially and educationally deprived.

Novelty/Improvement: The study suggests that the Government had initiated many programmes like skill training programs for the semi-skilled or unskilled labourers but it should be percolated among different social groups especially scheduled caste people in North Chennai. The study also suggested that the Government should give special skills training and employment for SCs through the Scheduled Caste Sub Plan (SCSP) to improve their social and economic status.

Keywords: Occupational Pattern, Occupational Inequality, Regional and Social Disparity

1. Introduction

The growth of the regional economy is closely related to economic, social, and demographic change. It proceeds in response to shifts in production and employment structures; spatial organization of enterprise; in consumption standards; educational attainment; and social prospects and aspirations. The Government of India has stressed in its vision programme on employment generation that at least 2% per annum has to be compatible with the 9% growth in the Indian economy. The aim of the 11th Five Year Plan is 'more inclusive growth' by reducing the inequality between the regions as well as social groups in India. The gains of economic growth have been significantly narrowed the inequality between regions, still, these inequalities have continued to grow in developed areas [1] also been emphasized that regional inequality was increased in developing as well as in developed countries by the dissimilarity process of urbanization and industrialization across the regions [2]. Acceptance of this fact that there is a lack of uniformity in distributing the socio-economic factors like education, health facilities, employment opportunities and income growth at the regional level. The state of Tamil Nadu has faster urbanization and industrialization in India since the inception of Globalization, it is shown that nearly half of the population who are living in urban areas of Tamil Nadu. Chennai is one of the great metropolitan cities in India and the capital of Tamil Nadu. It is a fully urbanized district among the 32 districts of Tamil Nadu.

The Chennai economy is playing an important role in the share of contributing to the manufacturing and service sectors in the economic growth of Tamil Nadu [3]. The socio-economic indicators like educational attainment, access to health care, level of per capita income and the rate of workforce participation are high in Chennai district as compared to the other districts of Tamil Nadu [4]. This socio-economic development of the Chennai region has been the major reason for a steady shift of people from rural areas to the already overcrowded city. Since the increase in population has tended to move faster than economic advancement, the avenues of productive employment opportunities have become scarce which results in marginal employment and unemployment/under-employment.

Therefore, the study is to investigate the steady increases and the benefits of the economic growth have reached to all regions of Chennai district and also sections of the people in an equitable manner. The study is to develop the research questions, i) are there regional differences in occupation pattern among the Zones of Chennai district? ii) Does the social disparity exist in the structure of occupation among the regions of Chennai district? Based on these research questions, the present study is designed with the main objectives are: To evaluate the occupational pattern of Chennai district by using the Primary Census Abstract for Chennai district of Tamil Nadu 1991, 2001 and 2011. To analyse the regional inequality in the occupational pattern of Chennai district by measures of decomposition of Gini inequality index, to find out the occupational status of social groups in Chennai district by using the Sphers Disparity Index.

2. Previous literatures

Earlier studies used the different methods of inequality index to combine the socio-economic factors influencing on the regional development and measured inter and intra-regional inequality of these composite indices over all countries. At National level literature, have studied racial occupational inequality by national and regional trends during the period 1940-1980. The study investigated race differences in occupational attainment by using the Index of Net Difference, ordinal inequality and Index of Dissimilarity. They concluded that the change in inequality favoured whites for the national and regional during the 1940s, and favoured blacks for during the 1950s, 1960s there is a wide disparity in access to education availability of food, and facilities like safe drinking water, health care infrastructure of the states in India. Literature review at Global, a study has revealed that spatial inequality in Sri Lanka rose rapidly in the 1990s by using the household income and expenditure surveys (HIES) for 2002 and 1995/96. The study concluded that the modern sector plays a larger role in continuing spatial inequality due to prevent lagging regions in getting access to the markets. The focused on spatial inequality in socio-economic standards in Nigeriaby measuring the mean logarithmic deviation index from the Nigeria Demographic and Health Survey of 2003. He found that the southern regions are more favourable and advanced more than the northern regions in socio-economic standards in Nigeria. Both National and Global level studies have concentrated on inter and intra-regional inequality in socio-economic standards of people in India and other developing countries measured by the different methods of inequality indices. However, these studies have not paid much attention to the decomposition of spatial inequality in the occupational pattern of a developed region. Hence, this study is to examine the regional economy and occupational pattern of Chennai district of Tamil Nadu.

3. Data and Methodology

To analyze the structure of occupational inequality between North zones and South zones of Chennai district in Tamil Nadu, the study relies on secondary data. Data on population trends, literacy, main worker, marginal workers and other classification of occupations by Chennai zone wise are computed from the Census report of India for the periods 1991, 2001 and 2011.

1. Selection of variables

The selected variables for occupational pattern have been taken from Census reports of India for the year 1991, 2001 and 2011. According to Census of India, the working population has grouped into three major groups.

1) Main workers 2) Marginal workers 3) Non-workers. There is a large assortment of main workers classified by Census authorities (Census 1991, 2001 and 2011). As though, it is difficult to make the analysis of main workers within the study region, an attempt is made to simplify the main workers for proper analysis. Therefore, the main workers are classified into four categories. 1. Cultivators. 2. Agricultural Labourers. 3. Household industries. 4. Other services.

2. Structure of zones in Chennai district

The present study investigates the proper comparison of the occupational pattern of Chennai district which is grouped into three regions like North, Central and South Chennai. Before the expansion of Chennai district in 2011, there are ten zones in the Chennai district with an area of 174 Km² (67sq.miles). The Northern Region consists of four Zones from I to IV, Central Region comprises with three Zones from V to VII and the Southern Region with three Zones from VIII to X [5]. The following table gives the list of zone numbers and its names in the Chennai District.

North Zones		Central Zones		South Zones	
Zone I.	Tondiarpet	Zone V	Kilpauk	Zone VIII	Kodambakkam
Zone II	Basin Bridge	Zone VI	Ice-House	Zone IX	Saidapet
Zone III	Pulianthope	Zone VII	Nungambakkam	Zone X	Mylapore
Zone IV	Ayanavaram				

3. Measures of inequality Indices

a) Decomposition of Gini Index [6]: The aim of the study is to analyse the relative economy structure of the North Chennai in comparison to the South Chennai with respect to occupational characteristics. For this purpose, Decomposition of Gini Index is using to measure occupational inequality between North region and South Region. The Gini Index is a ratio with values between 0 and 1, there is no inequality if the index value is 0 and the perfect inequality if the value is 1. Generally, it has been used to measure the income inequality with respect to population. In this study, instead of Income and Population, sub-regional level Cumulative proportion of workers (Yi) and Cumulative proportion of Population (Ni) have been used to compute the Gini’s coefficient.

Decomposability of inequality measures requires a consistent relation between overall inequality and its parts. More specifically, when dealing with decomposability, an effort has to be made to distinguish between “Within Inequality (I_{WIT})” and “Between Inequality (I_{BET})”. The “within inequality” element captures the inequality due to the variability of relevant aspect (e.g., occupation) within each region, while the “between inequalities” element captures the inequality due to the variability of occupation across different regions. The most general decomposition of any inequality index *I* generates a “within” element and a “between” the elements:

$$I = \underbrace{I_{WIT}}_{\text{WITHIN}} + \underbrace{I_{BET}}_{\text{BETWEEN}}$$

Assuming two region, North and South region, the within element of the Gini Index (G_{WIT}) is given by the following formula:

$$G_{WIT} = \left[\frac{N_{NC}}{N} \times \frac{Y_{NC}}{Y} \right] G_{NC} + \left[\frac{N_{SC}}{N} \times \frac{Y_{SC}}{Y} \right] G_{SC}$$

Where, *G_{NC}* and *G_{SC}* are the Gini indices measured for occupational pattern of the North Chennai and South Chennai respectively. *N_{NC} / N* and *N_{SC} / N* are the population weights given to each region. These weights are in turn given by the population share of North and South region (in the parenthesis). *Y_{NC}/Y* and *Y_{SC}/Y* are the occupational weights given to each region, i.e., the share of worker in North and South region (in the parenthesis). The between element of the Gini Index (G_{BET}) is given by:

$$G_{BET} = \frac{2}{Y} Cov \left(\bar{Y}, \bar{F(Y)} \right)$$

Where y is the distribution of occupation obtained by replacing actual workers with average of sub- region.

The study is excluded the Central region due to the insignificant differences in occupational structure of South and Central region. Moreover, city of Madras (Chennai) originated in North Chennai in the 17th century with the arrival of the East India Company. After independence of India, most of the growth in the recent decades is focused on southern parts of Chennai. For this reason, this study is focuses on South Chennai in comparison with North Chennai.

b) Disparity Index (DI): The study also assesses the relative status of the SC/ST in comparison to the Non-SC/ST with respect to occupational characteristics. For this purpose, the study uses the Sopher’s Disparity Index to measure the occupational disparity between SC/ST and Non-SC/ST. Disparity index has been calculated by the formula suggested, in fact, modified version of Sopher's Index for measurement for disparity. The following formula has been used.

$$\text{Disparity Index (DI)} = \text{Log} (X_2/X_1) + \text{Log} [(Q - X_1) / (Q - X_2)]$$

$$\text{Where, } X_1 = \frac{\text{ith Occupation of SC}}{\text{Total SC Population}} \times 100 \quad (\text{i.e Work Participate Rate of SC})$$

$$X_2 = \frac{\text{ith Occupation of Non-SC}}{\text{Total Non-SC Population}} \times 100 \quad (\text{i.e Work Participate Rate of Non-SC})$$

and $Q = 100$, $i = \text{Total worker, Main and Marginal worker etc.,}$

4. Results and Discussion

1. Analysis of occupational pattern by region

The occupational structure of Chennai district by region wise is presented in Tables 1-2. An attempt is made to interpret the data on the distribution of work participation rate of the total workers, main workers and marginal workers and data on the distribution of work participation rate in industrial categories for the year 1991, 2001 and 2011. Work participation rate (WPR) is measured the ratio of total workers to the total population and it is multiplied by 100.

Table 1. Work Participation rate (WPR) for Total, Main and Marginal workers

Regions	Total Workers			Main Workers			Marginal Workers		
	1991	2001	2011	1991	2001	2011	1991	2001	2011
North Chennai	29.20	32.44	37.53	29.20	29.74	33.26	1.24	2.70	4.27
Central Chennai	30.70	34.99	39.86	30.70	32.70	35.24	1.03	2.29	4.61
South Chennai	32.02	35.93	40.55	32.02	33.57	36.60	1.03	2.36	3.95
Total Chennai	30.50	34.27	39.11	30.50	31.79	34.85	1.12	2.48	4.26

Source: Computed from Census of India 1991, 2001 and 2011

2. Participation rate of main and marginal workers

The work participation rate (WPR) by region-wise shows that the aggregate share of the participation rate of all workers (both main and marginal workers) in Chennai district was increased from 30.5% in 1991 to 39.1% in 2011. The work participation rate of main workers was high in South Chennai while the participation rate of marginal workers was high in the North Chennai for the all census period 1991, 2001 and 2011 (Table 1).

It clearly points out that the maximum number of workers has participated in the marginal work and low in the main work in North Chennai as compared to South Chennai during the period of 1991, 2001 and 2011.

3. Work participation rate in Industrial categories

In Table 2 presents region-wise data on the work participation rate of cultivators, agricultural labour, manufacturing and processing in household industries and other workers in Chennai district for the Census 1991, 2001 and 2011. The participation rate of cultivators, agricultural labours, manufacturing and processing in household industries are identical low level in Chennai district while the work participation rate of manufacturing and processing in household industries are significantly high in the period of two decades 1991 - 2011. Most of the main workers have participated in the other than agriculture-related and household activities. The participation rate of other workers is substantially increased from 30.3% in 1991 to 33.8% in 2011. It is worthy of mention that the participation rate of other workers is high in South Chennai as compared to North Chennai during the study period.

Table 2. Work participation rate in industrial categories by region

Region	Cultivators		
	1991	2001	2011
North Chennai	0.02	0.30	0.20
Central Chennai	0.02	0.35	0.21
South Chennai	0.03	0.42	0.25
Total	0.02	0.35	0.22
Region	Agriculture Labour		
	1991	2001	2011
North Chennai	0.01	0.15	0.20
Central Chennai	0.00	0.12	0.28
South Chennai	0.00	0.13	0.20
Total	0.01	0.13	0.22
Region	Manufacturing and Processing in HH workers		
	1991	2001	2011
North Chennai	0.32	0.70	0.68
Central Chennai	0.14	0.54	0.55
South Chennai	0.10	0.52	0.61
Total	0.20	0.59	0.63
Region	Other workers		
	1991	2001	2011
North Chennai	28.85	28.60	32.18
Central Chennai	30.54	31.70	34.20
South Chennai	31.88	32.51	35.54
Total	30.27	30.71	33.79

Source: Computed from Census of India 1991, 2001 and 2011

4. Non-Workers in Chennai

The percentage of non-workers in Chennai district is given in Table 3. The percentage of non-workers in Chennai was declined from 67.96% in 1991 to 59.45% in 2011. It is noteworthy that North Chennai had the maximum share of the percentage of non-workers as compared to other regions of Chennai.

Table 3. Percentage of non-workers in Chennai district

Region	1991	2001	2011
North Chennai	70.76	67.56	62.47
Central Chennai	69.26	65.01	60.14
South Chennai	67.96	64.07	59.45
Total	69.46	65.73	60.89

Source: Computed from Census of India 1991, 2001 and 2011

5. Decomposition of occupational inequality by region

Data as presented in Table 4 clearly indicates that the occupational inequality in Chennai by region. The decomposition of Gini index results show that overall inequality of Gini index was 0.058 in total workers which were high in marginal workers with Gini index 0.064 and Main worker with Gini index 0.060 during the period 2011. The percentage share of occupational inequality between the north and south region was high in main workers with 51.0% and within-region was high in marginal workers with 86.83% during the period 2011. It is prominent to note that overall occupational inequality was declined in the period 2011 as compared to previous Census periods 1991 and 2001.

6. Regional inequality in industrial categories

Table 5 presented the decomposition of the regional inequality in different industrial categories in Chennai. The decomposition of Gini index results show that overall inequality of Gini indexes were 0.138 and 0.087 in cultivators and agriculture labour respectively. The percentage share of inequality between North and South region was high in other workers with 52.83% and within-region was high in rest of other sectors such as cultivators, agriculture labour and household industry with 61.08%, 94.13% and 82.31% during the period 2011. It is important to note that inequality between North and South Chennai in other workers (manufacturing, processing, servicing in other than household industry) in relative with other sectors in the census period 2011. It is found that the North Chennai was low in manufacturing, processing, servicing in other than the household industry as compared to South Chennai.

Table 4. Analysis results of decomposition of occupational inequality by region in 1991, 2001 and 2011

Decomposition of Gini Coefficient	Total Workers		
	1991	2001	2011
Within-region inequality	0.022	0.025	0.031
Percentage share	44.06	40.54	54.26
Between-region inequality	0.028	0.037	0.026
Percentage share	55.94	59.46	45.74
Overall Inequality	0.051	0.062	0.058
Percentage share	100.00	100.00	100.00
Decomposition of Gini Coefficient	Main Workers		
	1991	2001	2011
Within-region inequality	0.022	0.024	0.029
Percentage share	44.10	37.02	48.52
Between-region inequality	0.028	0.042	0.031
Percentage share	55.90	62.98	51.48
Overall Inequality	0.051	0.066	0.060
Percentage share	100.00	100.00	100.00
Decomposition of Gini Coefficient	Marginal Workers		
	1991	2001	2011
Within-region inequality	0.146	0.070	0.056
Percentage share	78.25	81.17	86.83
Between-region inequality	0.041	0.016	0.008
Percentage share	21.75	18.83	13.17
Overall Inequality	0.187	0.086	0.064
Percentage share	100.00	100.00	100.00

Source: Computed from Census of India 1991, 2001 and 2011

7. Analysis of occupational pattern by social groups

Table 6 indicates that the result of the disparity between the SCs and non-SCs at the different level of occupations in Chennai district in 2011. The disparity index of total workers was negative which means the work participation rate of SC was slightly high as compared to Non-SCs. The disparity of marginal workers was also negative which means the work participation rate of SCs was high (5.10%) in marginal workers. The WPR of manufacturing and processing other than household workers were 34.01% high among non-SCs in Chennai district for the year 2011. It means that the disparity between SCs and non-SCs were 1.8% in other workers.

It is found that the work participation rate of SCs was high in marginal work and agriculture labour as compared to the other social groups in Chennai district [7].

Table 5. Decomposition of Regional Inequality by industrial categories

Decomposition of Gini Coefficient	Cultivators		
	1991	2001	2011
Within-region inequality	0.029	0.082	0.084
Percentage share	39.64	45.94	61.08
Between-region inequality	0.044	0.097	0.054
Percentage share	60.36	54.06	38.92
Overall Inequality	0.073	0.179	0.138
Percentage share	100.00	100.00	100.00
	Agriculture labour		
	1991	2001	2011
Within-region inequality	0.148	0.043	0.082
Percentage share	66.05	84.01	94.13
Between-region inequality	0.076	0.008	0.005
Percentage share	33.95	15.99	5.87
Overall Inequality	0.225	0.052	0.087
Percentage share	100.00	100.00	100.00
	Manufacturing and Processing HH industry		
	1991	2001	2011
Within-region inequality	0.127	0.041	0.063
Percentage share	41.74	46.99	82.31
Between-region inequality	0.177	0.046	0.014
Percentage share	58.26	53.01	17.69
Overall Inequality	0.304	0.087	0.076
Percentage Share	100.00	100.00	100.00
	Other workers		
	1991	2001	2011
Within-region inequality	0.049	0.025	0.028
Percentage share	42.45	36.49	47.17
Between-region inequality	0.066	0.043	0.032
Percentage share	57.55	63.51	52.83
Overall Inequality	0.115	0.068	0.060
Percentage share	100.00	100.00	100.00

Source: Computed from Census of India 1991, 2001 and 2011

Table 6. Disparity in the Occupational Structure of Social groups in 2011

Occupational Structure	SC	Non SC	All	Disparity Index
Total workers (Main + Marginal workers)	39.28	39.18	39.11	-0.002
Main worker	34.18	35.08	34.85	0.017
Marginal workers	5.10	4.10	4.26	-0.100
Industries categories	SC	Non SC	All	Disparity Index
Cultivators	0.19	0.23	0.22	0.079
Agriculture Labour	0.24	0.22	0.22	-0.042
Manufacturing and Processing in HH workers	0.65	0.62	0.63	-0.017
Other workers	33.10	34.01	33.79	0.018

Source: Computed from Census of India 2011

5. Conclusion

The study examined the reaffirms of regional economy of Chennai district and also analysed the regional inequality in the occupational pattern of Chennai district by measures of decomposition of Gini inequality index. The finding of the study concludes that the cultivators, agricultural labour, manufacturing and processing in household industries were negligible due to the fully urbanized region of Chennai district.

However, the participation rate of marginal workers, manufacturing and procession in the household industries in North Chennai were substantially higher than South Chennai. The decomposition of the Gini index results show that the percentage share of occupational inequality between the North and South region was high in main workers. Because of this difference, main workers are high participated in South Chennai region as compared to North Chennai. It is also found that there is a regional inequality between the North Chennai and South Chennai region in getting access to employment in tertiary and service sector occupation. The Tamil Nadu Slum Clearance Report in 2014 declared that North Chennai had the maximum slums with the casual labour force in Tiruvottiyur, Manali, Madhavaram, Tondiarpet and Royapuram. Tiruvotriyur. This study also found that the majority of North Chennai people are engaged in the marginal occupation. Obviously, many of them belong to Scheduled caste with socially and educationally deprived. For this reason, the study concludes that the deprived people are still engaged in the low category of occupation and they face many difficulties in getting employment in tertiary, manufacturing and service sector occupation. The study suggests that the Government had initiated many programmes like skill training programs for the semi-skilled or unskilled labourer but it should be percolated among different social groups especially scheduled caste people in North Chennai. The study also suggested that the Government should give special skills training and employment for SCs through the Scheduled Caste Sub Plan (SCSP) to improve their social and economic status.

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The Publication fee is defrayed by Indian Society for Education and Environment (www.iseeadyar.org)

Cite this article as:

Ulaganathan S. Occupational pattern of Chennai district of Tamil Nadu: an analysis of regional inequality. *Indian Journal of Economics and Development*. September 2019, Vol 7 (9), 1-8.

Received on: 20/07/2019

Accepted on: 18/09/2019