Analyzing Consumption Inequality in India: Key Insights from the Household Consumption Expenditure Survey

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Abstract

This study examines the consumption expenditure inquality across social groups of various states in India to analyze the disparities in the consumption of resouces using MPCE. The Gini coefficient, a key indicator of economic inequality is calculated. Our findings reveal significant variations in income inequality across states, with Maharashtra exhibiting the highest Gini coefficient at 0.3692, followed by Chhattisgarh (0.3571) and Haryana (0.3516). Conversely, states such as Manipur and Tripura demonstrate lower levels of inequality, with Gini coefficients of 0.2405 and 0.2408, respectively. Also within states there is considereation variation amongs different caste, highlighting the homogenity of lower expenditure group. The uneven distribution of wealth and resources across castes is evident, emphasizing the need for targeted policy interventions to address these disparities.

Inquality, MPCE, Consumption Expenditure, HCES.

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1 Introduction

The relationship between economic growth, poverty reduction, and inequality has been a topic of extensive research, particularly in the context of developing countries, like India. Although economic reforms have been implemented, evidence on their impact on poverty reduction remains inconclusive. [Datt and Ravallion(2011)] notes that while poverty reduction does not show a clear response to growth post-reforms, inequality has increased. The auther emphasizes on the importance of analyzing poverty in relation to the distribution of income, specially when growth parameter is measured through household surveys rather than national accounts. In examining the broader context of poverty and inequality in India, [Deaton and Dreze(2002)] provides integrated estimates of these factors for various states spanning multiple years. His research finds that poverty reduction during the 1987-2000 aligned with previous trends, but regional disparities between rural and urban, southern and western regions widened, performing far better compared to their northern and eastern counterparts. Moreover, despite improvements in development indicators such as health and education, some regions experienced stagnation or regression, contradicting claims of widespread improvement during this period. The theoretical framework underpinning the relationship between economic growth and inequality is illustrated by Kuznets' hypothesis, which posits an inverted U-shaped relationship between income and inequality [Kuznets(2019)]. This model suggests that as economies develop, inequality initially increases before eventually declining. Kuznets theorized that this phenomenon arises from a demographic shift from agricultural to industrial sectors, where initial growth leads to increased inequality before later stages of development promote more equitable income distribution.

Further exploring the implications of inequality, [Deininger and Squire(1998)] identifies three significant findings based on cross-country data: (i) a strong negative correlation exists between initial asset inequality and long-term economic growth, (ii) income growth is hindered for the poor by inequality, whereas the rich are less affected, and (iii) the longitudinal data does not support the Kuznets hypothesis. These insights suggest that policies aimed at enhancing asset acquisition for the poor could foster economic growth and alleviate poverty. [Salverda et al.(2009)Salverda, Nolan, and Smeeding] argues that inequality is not only an ethical concern but also imposes significant economic and social costs. The normative theories of social arrangement underscore the importance of equality, particularly in income and wealth, as a foundation for equitable opportunities. Inequality curtails individuals' capacity to engage fully in various activities, thereby inhibiting a country's potential for growth.

The discourse on inequality often emphasizes consumption expenditure rather than income, as highlighted by Alvaredo [Alvaredo and Gasparini(2015)]. His chapter reviews trends in income and consumption inequality in developing countries since the 1980s, indicating a rise in national income inequality during the 1980s and 1990s, followed by a decline in the 2000s. Notably, a significant reduction in income poverty can be attributed to exceptional growth in China and improvements in living standards across developing regions during the 2000s. [Himanshu(2019)] enhances the discourse on inequality by examining its trends in India from the early 1990s onward. His review synthesizes diverse data sources and the existing body of literature, shedding light on the contradictory findings that stem from data inconsistencies and the intricate factors influencing inequality. While the primary emphasis is placed on economic indicators—such as income, consumption, and wealth—the review also incorporates non-monetary factors like education and health. This broader approach offers a more holistic understanding of the complex dimensions of inequality.

In summary, the literature collectively underscores the intricate interplay between economic growth, poverty reduction, and inequality, highlighting the need for targeted policies that address these challenges, particularly in developing economies like India.

However, the existing body of research predominantly focuses on income inequality other dimensions of economic disparity is not properlt addressed in the literature. While numerous studies delve into the nuances of income distribution [Zucman(2019)] [De Nardi and Fella(2017)] [Pfeffer and Waitkus(2021)], there is comparatively little attention given to expenditure and consumption inequality. The consumption patterns can offer a different perspective on inequality, reflecting not only the resources available to individuals and households but also their standard of living and overall well-being.

Furthermore, understanding expenditure and consumption inequality can provides insights into how different income groups allocate their resources, which can be crucial for effective policy formulation. Second, consumption data can often reveal disparities that income data might obscure, particularly in contexts where individuals may have similar income levels but differ significantly in their spending habits and lifestyles.

Thus, the scarcity of literature addressing expenditure and consumption inequality presents an important gap in the research. In this paper we have tried to address this gap that could lead to a more comprehensive understanding of economic inequality and its implications for social policies in India.

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2 Methods

2.1 Description of Data

The study utilizes unit-level data from the Household Consumption Expenditure Survey (HCES) 2022-23, which is administered by the National Sample Survey Office. The data can be accessed from https://microdata.gov.in/nada43/index.php/catalog/194. This survey is designed to gather detailed information on household consumption of goods and services. The insights derived from the HCES are crucial for analyzing consumption trends, expenditure behaviors, living standards, and overall household well-being. The latest iteration of the survey, conducted from August 2022 to July 2023, encompasses nearly all of India, with the exception of certain remote villages in the Andaman and Nicobar Islands. During this survey, data was collected from 8,723 villages, representing 155,014 households in rural areas, as well as from 6,115 urban blocks, which included 106,732 households. For our analysis of consumption inequality, we focus on the Average Monthly Per Capita Consumption Expenditure (MPCE). According to the National Sample Survey Office (NSSO), the MPCE is defined as "The Monthly Per Capita Consumption Expenditure (MPCE) is defined as: total household monthly consumption expenditure divided by the household size. This measure serves as an indicator of the household's level of living."

The survey employs a multistage stratified sampling design, with villages and urban blocks serving as the primary units in the first stage. Households represent the final stage units in this sampling approach. To select the samples, the method of Simple Random Sampling Without Replacement (SRSWOR) is utilized.

2.2 Calculation of MPCE

Let E_1, E_2, and E_3 represent the total expenditure on food, consumables and services, and durable goods, respectively, for a selected household, as gathered from three questionnaires: the Food Diary Questionnaire (FDQ), the Consumption Survey Questionnaire (CSQ), and the Durable Goods Questionnaire (DGQ). Additionally, let P_1, P_2, and P_3 denote the number of household members recorded during the completion of the FDQ, CSQ, and DGQ, respectively.

The total monthly expenditure (TE) for the household is calculated using the formula:

$$TE = E_1 + \left(\frac{E_2}{P_2}\right) \times P_1 + \left(\frac{E_3}{P_3}\right) \times P_1$$

Subsequently, the Average Monthly Per Capita Consumption Expenditure (MPCE) for the household is derived as follows:

$$MPCE = \frac{TE}{P_1}$$

2.3 Consumption inequality measures

There various methods avalaible in literature for analysising the economic inequaltiy including the Gini coefficient, Lorenz curve, Atkinson index, Palma ratio, Theil index, quantile regression, income mobility measures, Distributional National Accounts (DINA), Multidimensional Poverty Index (MPI), and headcount ratio [Cowell(2000)]. For the calculation convenience we hav considered only Gini coefficient and Lorenz curve for the study. The Gini coefficient is a pivotal measure for analyzing consumption inequality, particularly in the context of income and resources inequality. It can also to employed for consumption expenditure inequality. By utilizing the Monthly Per Capita Expenditure (MPCE) data, the Gini coefficient offers a nuanced understanding of how consumption is distributed across different segments of the population. A Gini coefficient of 0 represents perfect equality, where everyone has the same level of consumption, while a coefficient of 1 indicates maximum inequality, with one individual consuming all resources. In a socially diverse country like India, Gini coefficient derived from MPCE can reveal significant disparities in living standards and access to resources, given the socio-economic divides that exist within the country.

This analysis is crucial for policymakers and researchers aiming to develop targeted interventions to address consumption inequality and promote more equitable economic growth.

The gini coefficient is given as

$$Gini = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} (x_i - x_j)^2}{2n^2}$$

With the weights

$$Gini = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} (x_i - x_j) w_i w_j}{2 \left(\sum_{i=1}^{n} w_i\right)^2 \mu}$$

Where x_i is the value of the i-th element, w_i is the weight of the i-th element, and μ is the arithmetic mean. The weighted arithmetic mean can be calculated as:

$$\mu_w = \frac{\sum w_i x_i}{\sum w_i}$$

The calculation was carried on RStudio (Backend R version 3.6.0). The sampling weights have been used during calculations.

For the study we are going to focus mostly on the inequality between the differnt social groups across states, and within.

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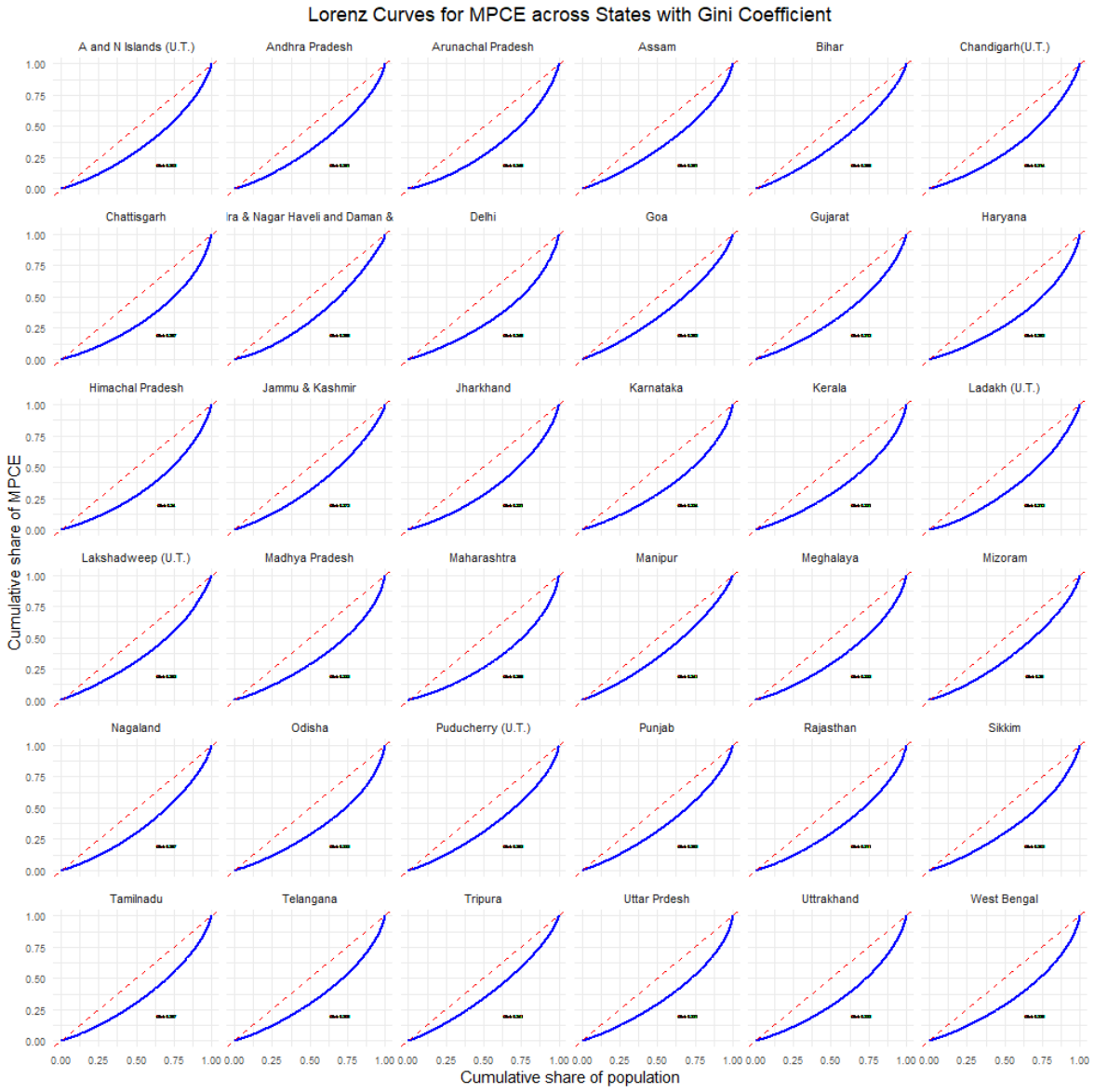

Figure 1: The Lorenz curve and gini coefficient for cunsumption expenditure across all state

3 Results

The figure 1 highlights significant disparities in consumption inequality across Indian states, with the national Gini coefficient standing at 0.34. Maharashtra, with the highest state coefficient of 0.3692, exhibits the greatest level of income inequality, indicating a substantial gap between the affluent and economically disadvantaged populations. This elevated inequality level points to an urgent need for targeted policy interventions to promote inclusive growth and improve access to resources for marginalized groups. In contrast, Manipur boasts the lowest Gini coefficient at 0.2405, reflecting a more equitable distribution of income within its population. This lower level of inequality may foster greater social cohesion and stability, suggesting that the state's policies might be more effective in promoting economic equity. The contrasting scenarios of Maharashtra and Manipur, alongside the national average of 0.34, underscore the critical need for tailored approaches to address the unique economic challenges faced by different regions in India, ensuring that growth benefits all segments of society.

The data presents the Gini coefficients for various social categories across different Indian statesl

Figure 2: The gini coefficient for cunsumption expenditure in different social groups across all state

see the figure 2, specifically focusing on Other Backward Classes (OBC), Scheduled Tribes (ST), Others, and Scheduled Castes (SC). Ladakh (U.T.) has the highest Gini coefficient for OBC at 0.4134, indicating a relatively higher level of inequality within this category compared to other states. Haryana follows with a Gini coefficient of 0.3147 for OBC, highlighting significant income disparities among this group. On the other hand, Meghalaya shows the lowest Gini coefficient for OBC at 0.1771, suggesting a more equitable distribution of income among OBCs in that state. For STs, Haryana also has a high Gini coefficient of 0.4122, indicating considerable income inequality, while Delhi reports a lower value of 0.2103. The coefficients for SCs and Others exhibit similar patterns of inequality across the states, with some states like Maharashtra and Mizoram showing moderate levels of inequality. This data underscores the varying degrees of income distribution and economic disparities among different social groups in India, emphasizing the need for targeted interventions to address inequality in these communities.

Focusing on the Scheduled Castes (SC) category, the Gini coefficients indicate varying levels of income inequality across Indian states and union territories. Mizoram reports the highest Gini coefficient for SCs at 0.3658, suggesting a considerable level of income inequality within the SC population in the state. In contrast, Goa has a lower Gini coefficient of 0.2290, indicating a more equitable income distribution among the SC community. Other states like Arunachal Pradesh (0.3092) and Himachal Pradesh (0.3191) exhibit moderate levels of inequality. Overall, the data suggests that income disparities within the SC population vary significantly across states, with some regions facing more pronounced inequality than others.

Focusing on the Scheduled Tribes (ST) category, the Gini coefficients across Indian states and union territories reveal disparities in income distribution. Haryana shows the highest Gini coefficient for the ST population at 0.4122, indicating significant income inequality. Himachal Pradesh follows with a coefficient of 0.3636, while Arunachal Pradesh has a relatively lower value of 0.3413. States like Mizoram (0.2781) and Goa (0.2166) exhibit lower Gini coefficients, reflecting more equitable income distribution among the ST community. The data shows considerable variation in income inequality levels within the ST population across different regions of India.

For the Other Backward Classes (OBC) category, the Gini coefficients vary across Indian states and union territories, reflecting income inequality among this group. Ladakh (U.T.) has the highest Gini coefficient for OBCs at 0.4134, indicating significant income inequality. Chandigarh (U.T.) and Nagaland follow with values of 0.3448 and 0.3359, respectively, showing high inequality. West Bengal and Rajasthan display lower Gini coefficients at 0.2631 and 0.2856, respectively, suggesting more equitable income distribution among OBCs in these states. Overall, the data illustrates a range of income disparities within the OBC population across the country.

For the "Others" category, which typically includes groups outside of SC, ST, and OBC, the Gini coefficients highlight varying levels of income inequality across Indian states and union territories. Maharashtra shows the highest inequality with a Gini coefficient of 0.3759, followed closely by Haryana (0.3491) and Delhi (0.3587). On the other hand, states like Goa (0.2578) and Tripura (0.2473) exhibit relatively lower levels of inequality within this category. The data reflects a broad range of income disparities among the "Others" category, with some regions experiencing significantly higher inequality than others.

The analysis of Gini coefficients across different social categories reveals that the OBC (Other Backward Classes) category shows the highest variation in income inequality among states. The Gini coefficient for OBCs ranges from 0.4134 in Ladakh, indicating higher inequality, to 0.1771 in Meghalaya, suggesting relatively lower inequality. This wide range reflects substantial disparities in income distribution for the OBC category across different regions. In comparison, the ST (Scheduled Tribes) category has a Gini coefficient range from 0.4122 in Haryana to 0.2166 in Goa, and the SC (Scheduled Castes) category ranges from 0.3658 in Mizoram to 0.2089 in Puducherry. The Others category shows a range from 0.3759 in Maharashtra to 0.1114 in Lakshadweep. Among these, the OBC group demonstrates the largest variation in income inequality across states.

4 Conclusion and Discussion

Calculating inequality measures provides valuable insights into the disparities that exist among different caste groups within India. For instance, states such as Maharashtra, Haryana, and Delhi exhibit pronounced consumption inequality.In contrast, northeastern states like Mizoram, Manipur, Sikkim,

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and Tripura display considerably lower levels of consumption inequality, suggesting a more equitable distribution of resources among their residents.

At the national level, the inequality measure for consumption stands at 0.34. This figure is predominantly influenced by the larger states, where economic activities and disparities are more pronounced. Moreover, when analyzing the distribution among caste categories, it becomes evident that the Other Backward Classes (OBC) and Other groups are less homogeneous in terms of economic status compared to other categories. This suggests a wider variation in consumption patterns and living standards within these groups.

Additionally, as shown in the appendix, Scheduled Castes (SC) and Scheduled Tribes (ST) have a comparatively lower Monthly Per Capita Expenditure (MPCE) than other groups. This further underscores the economic challenges faced by these marginalized communities, indicating that they are at a disadvantage in terms of consumption capabilities and overall economic well-being. There is scope to further explore the rural-urban differntial and how gender plays the resources distribution within the family.

One limitation of this survey it doesn't provide any information regarding the intra relative distribution of consumption. Also, no standardised price structure is used for collecting the information. This can introduce some nuance, warning for careful interpretation.

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5 Appendix

Table 1: Monthly Per Capita Expenditure by State and Caste Group For Rural

State	ST	SC	OBC	Others	All*
Andhra Pradesh	3772	4565	4824	555	487
Assam	3289	3387	3404	3523	3432
Bihar	2927	3058	3479	3691	3384
Chhattisgarh	2258	2347	2665	3187	2466
Gujarat	3412	3592	3649	4605	3798
Haryana	4970	4299	4771	5531	4859
Jharkhand	2218	2851	2997	3473	2763
Karnataka	4086	4258	4377	4952	4397
Kerala	4526	5058	5391	7451	5924
Madhya Pradesh	2651	2977	3302	3713	3113
Maharashtra	2726	3742	4017	4705	4010
Orissa	2384	2899	3258	3484	2950
Punjab	5311	4583	5335	6279	5315
Rajasthan	3206	3794	4527	5428	4263
Tamil Nadu	4713	4898	5462	5773	5310
Telangana	4420	4526	4937	5269	4802
Uttar Pradesh	2295	2932	3191	3747	3191
West Bengal	2658	3152	3234	3427	3239
All-India	3016	3474	3848	4392	3773

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Table 2: Monthly Per Capita Expenditure by State and Caste Group For Urban Area

State	ST	SC	OBC	Others	All*
Andhra Pradesh	6353	6427	6332	7637	6782
Assam	5410	5173	6374	6598	6136
Bihar	3633	3565	4501	6291	4768
Chhattisgarh	4068	3659	3963	5847	4483
Gujarat	5322	5322	5871	7688	6621
Haryana	6241	5868	7077	9429	7911
Jharkhand	3274	3888	4738	5998	4931
Karnataka	5984	637	7516	9099	7666
Kerala	9373	5832	6443	8822	7078
Madhya Pradesh	4436	4415	4662	5929	4987
Maharashtra	5337	5492	5913	7475	6657
Orissa	3563	4509	5045	6252	5187
Punjab	582	5348	6294	7729	6544
Rajasthan	5811	4722	5525	7174	5913
Tamil Nadu	6115	6423	7791	7831	7633
Telangana	6312	6823	7824	9534	8158
Uttar Pradesh	4644	4502	4652	6073	5043
West Bengal	5228	4606	4306	5636	5267
All-India	5414	5307	6177	7333	6459

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Table 3: Statewise Gini Coefficients

State	Gini Coefficient
Maharashtra	0.3692410
Chhattisgarh	0.3571214
Haryana	0.3515673
Delhi	0.3478141
Arunachal Pradesh	0.3454259
Himachal Pradesh	0.3395161
Karnataka	0.3337423
Madhya Pradesh	0.3323556
Uttarakhand	0.3323055
Odisha	0.3320870
Jharkhand	0.3311472
Kerala	0.3305390
West Bengal	0.3250437
Meghalaya	0.3224340
Uttar Pradesh	0.3208934
Chandigarh (U.T.)	0.3138995
Ladakh (U.T.)	0.3133193
Gujarat	0.3124069
Rajasthan	0.3107013
Telangana	0.3083528
Sikkim	0.3032099
Andaman and Nicobar Islands (U.T.)	0.3020722
Nagaland	0.2973765
Tamil Nadu	0.2967862
Puducherry (U.T.)	0.2915900
Andhra Pradesh	0.2906353
Assam	0.2905784
Dadra and Nagar Haveli and Daman and Diu	0.2852448
Punjab	0.2824840
Lakshadweep (U.T.)	0.2820552
Mizoram	0.2796987
Jammu and Kashmir	0.2723623
Bihar	0.2581801
Goa	0.2521657
Tripura	0.2408026
Manipur	0.2405367

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