

Analysis of Interstate Income Inequality of India in Post Reforms Period: An Application of Decomposition Analysis

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Abstract: The study examined the trends in income inequalities across states in the post reforms period by estimating the family of generalized entropy indices. The findings revealed that all of the entropy indices showed an increasing trend in income inequality among states from 1993-94 to 2019-20. However, the speed of this changing dynamics of income inequality differs significantly in the various sub-periods subject to changing government policy and various other exogenous factors. Interestingly, the agricultural sector has a minimal impact on overall income inequality in India, suggesting that promoting faster growth in agriculture can lead to more inclusive economic development, given its potential for high employment generation. Additionally, the study found that the industrial sector's contribution to both economic growth and aggregate income inequality has been declining continuously. In the post-reforms period, often referred to as the era of service-led growth, the service sector not only contributes increasingly to the country's economic development but also plays a dominant role in driving aggregate income inequality.

Key words: Income inequality, decomposition analysis, economic growth, India, Inequality Index Decompositions.

JEL Codes: D63, O15, R12.

Introduction

Economic inequality has taken a prominent position in public discourse, particularly due to a notable increase during the ongoing Covid-19 pandemic. This surge in inequality is underscored by a significant number of workers in informal sectors losing their jobs, juxtaposed with a substantial increase in earnings for a select few large corporations, (Ferreira 2021). There is a recent surge of interest among policymakers and researchers in understanding the dynamics of inequality. Reducing income inequality within various levels of economic development stands as a paramount objective for Indian policymakers. Economic growth emerges as the preeminent catalyst for alleviating poverty, enhancing the quality of life, and mitigating income disparities in developing nations. Compelling evidence from both international cross-country research and contextual analyses at the national level underscores the imperative of swift and sustained development to expedite progress toward achieving the Millennium Development Goals. A robust discourse surrounds the impact of economic reform on income inequality in developing economies like India, Brazil, and China, primarily rooted in these nations' traditional concerns prioritizing equality over efficiency. It is evident that economic growth serves as a potent force in the substantial reduction of poverty. The widening income disparity among states acts as an obstacle to achieving balanced economic growth, negatively affecting the socio-economic conditions of an economy. Elevated inequality hampers overall growth by limiting the capabilities of lower-income groups while bolstering the capacity of higher-income groups to maintain well-being and accumulate both physical and human capital (Galor, O., & Moav, O. 2004). The growing disparity can be attributed, in part, to structural variations among states. In less developed states, a significant segment of the population relies heavily on agriculture, whereas in more advanced states, a substantial portion of the population is involved in the secondary and tertiary sectors to sustain their livelihoods. For instance, in Bihar, more than 70 percent of the labor force is employed in agriculture, despite 90 percent of the state's population residing in rural area (T sujita et al. 2010). As development progresses, increasing urbanization brings forth potential traps of inequality in income, consumption, housing, assets, education, health, and unemployment. Urban areas, integral to the development process, serve not only as locations where inequality processes unfold but also as modes of production and reproduction (Bhan and Jana, 2015). The objective of this study is to measure and analyze the interstate income inequality in India in the post-reforms period. In 1991, the Government of India started the process of economic reforms broadly focused on liberalization, globalization, and privatization of the Indian economy. The main agenda of these so-called economic reforms is to drive the economic development of India to the new heights. Undoubtedly, the country had been growing at faster rate of economic growth until 2008 when Global Financial Crisis started from United States of America, hit the globe. Since then, the global economy is experiencing the recession and evidently, India is not an exception to it. Apart from it, Indian economy has experienced many policy changes like demonetization, implementation of goods and services tax (GST), end of five year plans and may other changes in recent years. All of these changes have a great impact on India's growth prospects as well as on the dynamics of interstate income inequality. In this changing scenario, it is important to study the trends and composition of interstate income inequality for policy implications. Further, process of economic development acts as a destabilizing factor in many ways. For instance, as the economy grows at a faster rate, the economic inequalities also grow due to the concentration of wealth in favour of the rich, which is a well known fact established by distributional theories of macro economics (e.g. Kalecki, 1938 and Kaldor, 1980). Therefore it is necessary to examine the dynamics of economic inequalities and economic growth from the perspective of economic theory as well as policy. At this background, this chapter attempts to measure

and analyze the interstate economic inequality in India in the post-reforms period. This research contributes to the existing literature on income inequality by offering a comprehensive analysis of the interstate dynamics in the context of post-reform India. The findings are expected to inform policymakers, economists, and development practitioners, facilitating the design of targeted interventions to reduce economic disparities and promote equitable growth across regions. The paper has five sections including the present one. Section 2 presents a brief review of latest existing empirical literature on income inequality. Section 3 discusses methodological aspects. Section 4 attempts to measure and analyze aggregate interstate income inequality based on various indices, aiming to account for sectoral contributions to the overall interstate inequality. Finally, Section 5 concludes with policy implications.

Review of literature

As far as income or economic inequality in India is concerned, a large volume of empirical literature is available in this regard. However, only a few studies are available on the decomposition analysis of income inequality. In this section, an attempt has been made to review the most recent and relevant empirical literature in this regard.

Khan (2015) utilizes a commonly employed method to analyze the factors contributing to inter-state disparity in India over the past two decades (from 1993-94 to 2012-13). The research employs a Gini coefficient based decomposition analysis to examine the specific contributions of different sectors to the variation in per capita Net State Domestic Product (NSDP) among states. The findings indicate that the inter-state disparity in per capita NSDP has increased throughout the study period. The decomposition analysis reveals that the service sector plays a significant role in widening this inter-state disparity. The industry sector also contributes to the overall inequality of per capita NSDP, although to a lesser extent than the service sector. On the other hand, the contribution of the agriculture sector has declined over the study period. Consequently, focusing on agriculture could potentially help reduce inter-state disparity, as it has a counter-balancing effect.

By analyzing household survey data representative of the entire country and using districts as the lowest level of geographical analysis, Azam and Bhatt (2018) investigate the influence of spatial factors on income inequality in India. Their study focuses on both rural and urban areas and reveals that within-district income disparities are the primary drivers of income inequality in 2011. Notably, in rural India, between-state income differences have a greater impact on between-district inequality. Conversely, in urban areas, within-state income disparities play a more significant role in explaining between-district inequality. Similar patterns are observed when considering consumption expenditure, with relatively lower levels of inequality but consistent trends. Furthermore, by comparing data from 1993 and 2011, they find that while within-district income differences account for the majority of income inequality in rural India during both periods, the share of between-district differences has increased over time. Between-district differences contribute to approximately one-third of the total increase in rural income inequality between 1993 and 2011.

Mishra, Kumar and Sinha (2019) attempt to provide fresh insights into the nature, intensity, and breakdown of inequality changes in India between 2005 and 2012, despite the country's rapid economic growth since the 1980s. The authors focus on income inequality using the Gini coefficient and analyze local inequality using the "ABG" distribution analysis tool. The study examines three inequality parameters (α , β , and γ) to assess changes in income distributions over time. The findings indicate that inequality remains relatively constant at the median level (α), but there is a rise in inequality at the upper

(β) and lower (γ) ends of the distribution. Additionally, the analysis of inequality decomposition reveals that while income growth contributes to reducing inequality, it is counteracted by the reordering of income, leading to an overall increase in inequality.

A study by Aneja, Barkha, and Banday (2021) examine the behavior of different sectors and their impact on income inequality. Firstly, it estimates the sectoral decomposition of NSDP among various states from 1991-1992 to 2016-2017. Secondly, it analyzes the sector-wise decomposition of regional inequality in terms of per capita income. Finally, it investigates the role of developmental expenditure in regional inequalities, specifically in terms of per capita developmental expenditure across states. According to the empirical results, India has experienced significant growth in per capita income during the post-reform period. This growth has been accompanied by notable changes in the sectoral composition of income. The tertiary sector has emerged as the primary contributor to post-reform growth. When examining sector-specific disparities, it is observed that disparities within the primary and tertiary sectors have decreased, while the secondary sector has experienced an increase. However, overall, the tertiary and secondary sectors have played a more prominent role in exacerbating income inequality among states, while the primary sector has acted as a mitigating factor in bridging this gap.

Das and Srivastava (2021) examine the relationship between land ownership and income inequality among rural agricultural households in India. The study utilizes a national survey of farmers to assess the extent of land and income inequality using various measures such as the Gini coefficient, Palma ratio, and quantile distribution. Additionally, the study explores the impact of different sources of income and various socioeconomic, production theory-related, and geographic factors on overall income inequality among agricultural households at a national level. This is done through the use of regression-based inequality decomposition (RBID) analysis of the income function. The findings suggest that both land and income inequalities are highest in states with advanced agricultural sectors. The RBID analysis reveals that the size of land holdings is the primary driver of income inequality among agricultural households, followed by crop productivity at the household level. Furthermore, the analysis confirms statistically that the proportion of income derived from wages and livestock has a negative relationship with overall inequality among agricultural households.

De and Devi (2023) focus on understanding consumption inequality in urban areas of Manipur, considering unit-level data from the National Sample Survey. They examine the role of spatial factors and household characteristics in shaping inequality patterns. Despite slow per-capita growth, the study finds an increasing trend in the Gini coefficient for the overall state of Manipur. In terms of consumption, the Gini measures show an overall increasing trend between 1993 and 2011, with rural areas experiencing higher inequality levels than urban areas in 2011-2012, which differs from the national trend. Additionally, the per capita income in Manipur is 43% lower than the all-India average in 2019-2020. The study identifies that the within-component, encompassing both within-district and within-sector factors, plays a significant role in overall consumption inequality. Regression analysis reveals that factors such as age, land ownership, and having a regular salary earner in the household contribute to the overall level of inequality in average per capita consumption expenditure.

Among these studies, only two studies (viz. Khan, 2015 and Aneja, Barkha, & Banday, 2021) deals with sectoral decomposition of interstate income inequality, where Khan (2015) utilize the data from 1993-94 to 2012-13. Therefore, only one study is available which utilize the information after the 11th five year plan. After 2012-13, major policy changes like demonetization, implementation of GST, end of five year planning etc. have been taken place. Taking these changes into consideration, the present study extends its

period of analysis to 2019-20. Therefore, the present study is an attempt to substantiate the findings of the previous studies by using the latest data.

Methodology

Data source and Sample size

India is a Union of 28 states and 8 union territories (UTs) Table B of the appendix. The study basically deals with the interstate income inequality; therefore it includes 26 states out of 28. Two states viz. Meghalaya and Telangana are not included in the sample of the study. Meghalaya is not included due to non availability of data for the period under consideration. As far as Telangana is concerned, it came into existence as a separate state in 2014 and before 2014 it was part of Andhra Pradesh. Therefore the data of Telangana is available 2014 onwards only. Due to this, the study continues to consider Telangana as part of Andhra Pradesh even in the period after 2014. Apart from this, the study includes two union territories viz. Delhi and Puducherry in the sample for two reasons: First, political system of these two UTs is more close to the political system of states. Second, both of these two UTs have significant portion of India's population.

The major data sources include the Annual Survey of Industry (ASI), National Account Statistics (NAS), NSSO, Center for Monitoring Indian Economy (CMIE), and the Handbook of Statistics of the Reserve Bank of India. The data are collected based on the financial year (from 1st April to 31st March).

3.2 Statistical Technique

To fulfill the research objective, we have utilized the Net State Domestic Product at constant prices. Initially, the data undergo transformation to a common base year (2011-12) through the base shifting and splicing method. This method is employed when the previous base becomes outdated and ineffective for meaningful comparisons. Shifting the base allows the series to be expressed in terms of a more recent time period, facilitating the derivation of a new series with an updated base.

Index number for old base/Index number for new base*100

Splicing: - The process of splicing is very easier and is simple and is akin to that used in shifting the base. It is expressed in the form of formula as follows:

$$\text{Splices Index No} = \frac{\text{Index Number of current year}}{\text{Old Index of new base year}} \times 100$$

Inequality Index Decompositions: Decomposition requires overall inequality to be decomposed (disaggregated) into constituent parts such as sources of income or population sub-groups. A disaggregation of inequality is desirable for both analytic and policy purposes. In this context, two types of decomposition are of special interest: static decomposition, and dynamic decomposition. The static decomposition provides insights into the structure of the overall inequality while the dynamic decomposition sheds light on the causes of changes in inequality.

However, the exact procedure and benefits of decomposition varies with inequality measure. An analytically rich and practically useful class of inequality measures is that of additively decomposable measures. A sub-set of indices that have certain analytical advantages over other additively decomposable measures is given by the single parameter ‘Generalized Entropy’ family (Shorrocks 1984):

$$I_{\alpha} = \frac{1}{n\alpha(\alpha-1)} \sum \left[\left(\frac{y_i}{u} \right)^{\alpha} - 1 \right] \quad \alpha \neq 0, 1$$

Where n is the number of economic units, y_i is the income of unit i and μ is the arithmetic mean income.

The value of I_{α} ranges from 0 to ∞ with higher values representing higher levels of inequality. This class includes:

The mean logarithmic deviation,

$$I_0 = \frac{1}{n} \sum \log \frac{y_i}{u}$$

The Theil coefficient

$$I_1 = \frac{1}{n} \sum \frac{y_i}{u} \log \frac{y_i}{u}$$

The monotonic transformation of coefficient of variation

$$I_2 = \frac{1}{2nu^2} \sum (y_i - u)^2 = \frac{1}{2} cv^2$$

This study uses I_2 index which possesses the most desirable decomposition properties (Jenkins 1995), besides having easy economic interpretation.

Decomposition by Income Sources (sectoral decomposition): Suppose income y_i of economic unit (region) i comes from different sources (or sectors). Let y_{is} denote the income of unit i from source s ($s=1,2, \dots, S$) so that $\sum_s y_{is} = y_i$ and $y = (y_1, y_2, \dots, y_n)$ represents the distribution of total (aggregate) income. It is then useful to express total inequality I as the sum of source contributions, C_s , i.e.,

$$I_2 = \sum_s C_s$$

Where C_s depends on income from source s. A source provides a disequalizing effect if $C_s > 0$ and an equalizing effect if $C_s < 0$.

Now define

$$c_s = C_s / I_2$$

Therefore,

$$\sum_s c_s = 1$$

C_s is the absolute contribution of source s to overall (aggregate) inequality, while c_s are its proportional contribution.

The exact procedure for decomposition depends on the measure of inequality, however. For I_2 index, this decomposition is defined as:

$$I_2 = \sum_s c_s I_2 = \sum_s \chi_s \rho_s \sqrt{I_2 I_{2s}}$$

Where χ_s is the share of source s in the total income, ρ_s is the correlation coefficient between income from source s and total income and I_{2s} is the inequality index for distribution of income from source s . So

$$I_2 = \sum_s C_s = \sum_s \chi_s \rho_s \sqrt{I_2 I_{2s}}$$

For the dynamic decomposition, we have

$$\Delta I_2 = \sum_s \Delta C_s = \sum_s \Delta[\chi_s \rho_s \sqrt{I_2 I_{2s}}]$$

Where Δ is the difference operator. And the percentage inequality changes are,

$$\% \Delta I_2 = \frac{100 \Delta I_2}{I_2} = \sum_s c_s \% \Delta C_s$$

A large value of $c_s \% \Delta C_s$ suggests that distributional changes in income from sources have a large influence in changes in total (aggregate) inequality (see Jenkins 1995; and Theil 1989 for complete methodology)

Results and Discussion

Analysis of Interstate Inequality in per capita Income

Table 1 and Figure 1 show the trends of aggregate interstate inequality of per capita income measured by ‘the family of generalized entropy indices’ i.e. the mean logarithmic deviation (I_0), the Theil index (I_1) and the monotonic transformation of the coefficient of variation (I_2). In addition, the table also includes the Gini coefficient (G) because of its popularity among the researchers as the most common index widely used in studies analyzing the economic or income inequality. We have used these four indices for measuring the income inequality to make the results more robust and also to facilitate the cross verification of the results. Since the term ‘economic inequality’ may be narrowly defined as ‘income inequality’, we use these two terms interchangeably in this study. It is worth mentioning that all the indices in Table 1 as well as other subsequent tables in this chapter are multiplied by 1000 in order to make the comparisons easy to understand.

Table 1: Inter-state Inequality in per capita NSDP: Various Inequality Indices

Year	INDEX*1000			
	I_0	I_1	I_2	G
1993-94	37	39	117	219
1994-95	37	39	110	220
1995-96	37	39	102	219
1996-97	40	43	121	231
1997-98	41	44	118	234

1998-99	50	55	170	258
1999-00	49	54	172	256
2000-01	50	55	175	264
2001-02	49	53	171	260
2002-03	51	56	175	267
2003-04	50	53	161	260
2004-05	52	55	169	267
2005-06	58	59	175	282
2006-07	58	60	175	285
2007-08	57	58	159	282
2008-09	57	58	153	282
2009-10	63	62	164	297
2010-11	64	64	174	301
2011-12	70	73	220	316
2012-13	64	63	166	299
2013-14	60	58	136	289
2014-15	68	67	177	307
2015-16	73	72	194	317
2016-17	75	75	211	322
2017-18	75	76	209	336
2018-19	74	75	211	330
2019-20	75	76	214	333

Source: Author's calculation

Table 1 shows that just after the commencement of economic reforms or during the period of 8th five year plan (1992-93 to 1996-97), the aggregate income inequality of per capita income as measured by all four indices roughly exhibited a constant trend. However, at the end of 8th five year plan (i.e.1996-97), the income inequality started to rise. This may be due to the fact that 1991 was the year of financial distress caused by rising oil price due to the gulf war along with large and growing fiscal imbalances over 1980s. This financial crisis forced the Government of India to undertake the economic reforms as per the recommendations of then finance minister Dr. Manmohan Singh. Due to these major economic reforms the GDP growth started to rise and consequently the actual growth rate (6.8%) was recorded much higher than the targeted growth rate (5.6%) during the 8th five year plan. It is a well established fact by Kuznets (1955) that in a developing economy, the rise in per capita income is followed by the rising economic inequalities. This lagged relation between economic growth and income inequality explains the dynamics of aggregate interstate economic inequality over the period of 8th five year plan (1992-93 to1996-97). That is, the stagnant economic growth of pre-reforms period was a major factor behind this constant trend in income inequality. During the 9th five year plan (1997-98 to 2001-02), the interstate income inequality was continued to rise due to the remarkable economic growth made in the 8th five year plan. However, a sudden drop had been observed in the trend of aggregate interstate income inequality in terms of all four indices in the last year of 9th five year plan (i.e. 2001-02). One possible explanation of this fall in income inequality may lie in the fact that the actual growth rate of GDP (5.4%) during 9th plan was not only below the targeted growth rate (6.5%) but also below the growth rate of 8th five year plan. It is worth

mentioning that one must keep a basic precaution in mind while interpreting such results on the basis of economic theories since economic variables do not always behave in a way as predicted by economic theories as many other economic and non-economic variables remain continuously in operation and therefore disturb such theoretical relations.

It is interesting to note that the income inequality demonstrated a continuously rising trend for the period 2002-03 to 2011-12 in terms of all four indices of inequality. The period includes two five year plans (i.e. 10th and 11th). The 10th and 11th five year plans are known as the period of continuously rising growth rate of GDP. The average growth rate was observed 7.6% in 10th five year plan (2002-03 to 2006-07), which increased to 8% in 11th five year plan (2007-08 to 2011-12). It is the highest growth rate ever achieved in the economic history of India since Independence. Therefore, the rise in the level of interstate inequality was quite natural in the period of high economic growth i.e. the period of 10th and 11th five year plans. However, a sudden decline had been observed during the initial two years (i.e. 2012-13 and 2013-14) of 12th five plan which may be due to the fact that during these two years the growth rate of GDP was recorded very low (e.g. below five percent) due to the recessionary pressures followed by the global financial crisis. This sluggish growth had been continued to 2019-20. An interesting fact has been emerged from the data in Table 1 that for the period from 2014-15 to 2019-20, the income inequality was continuously rising despite the slow growth rate over this period against the hypothesis proposed by Kuznets which states that a higher growth rate of income leads to a higher level of economic inequality and vice-versa. It may be possible due the fact that in this period, the Indian economy has undergone some major changes. Some of these changes may be outlined as: first, since after the global financial crisis of 2008, the world economy is experiencing slowdown in economic growth. However, India is less affected by this crisis, the adverse effects of this slowdown on the Indian economy is certainly unavoidable. Second, in 2015 the Government of India dissolved the Planning Commission and replaced it with a new institution named NITI Ayog. In this way, the Indian economy has entered into a new era named as post planning period. Currently, there is no planning commission and no ongoing five year plan. The first change along with some other changes viz. demonization, implementation of GST etc. may be responsible for the low growth rate of GDP in this period. On the other hand, the end of planning process may be responsible for the rising trend of interstate income inequality in post planning period. Since, one of the main objectives of the five year plans is to promote the balanced regional and sectoral growth of the economy. In this way the five year plans not only helped the economy to move on the path of economic development, but also acted as an offsetting factor as far as regional inequalities are concerned. Therefore, both of these changes on *a priori* ground may be responsible for falling growth rate along with rising inequality.

Analysis of the Sectoral Contributions to Aggregate Income Inequality

In section 4, we have analyzed the dynamics of interstate income inequality from the perspective of economic development. In economics, merely focusing on one aspect in order to explain the trends of income inequality is not only inadequate but also unsatisfactory. Therefore, in order to understand the inner mechanism of interstate income inequality, it necessary to investigate the structural and sectoral changes which the Indian economy has been experiencing in the post reforms period. For this purpose we have chosen I_2 index among the other indices explained in section 4 Since all four indices exhibits almost similar trends in the interstate income inequality, the preference for I_2 index over the other indices may

not be considered objectionable. Moreover, a significant advantage of choosing the I_2 index is that it is easy to decompose into various components and in this way it helps to understand the inner structure of economic inequality. The results of sectoral decomposition of interstate inequality have been demonstrated in Table 2 which accounts for the sectoral contributions to aggregate income inequality.

Table 2: Sectoral Contribution to Inter-state Inequality in Post-Reforms Period: Static Decomposition

Year	Aggregate Inequality (1000I ₂)	Absolute sectoral contribution (1000C _k)			Percentage sectoral contribution (100c _k)		
		Agriculture	Industry	Services	Agriculture	Industry	Services
1993-94	117	4	69	44	3	59	37
1994-95	110	3	64	43	2	58	40
1995-96	102	3	58	42	3	56	41
1996-97	121	2	69	50	2	57	42
1997-98	118	-1	69	51	-1	58	43
1998-99	170	-0	104	66	-0	61	39
1999-00	172	2	103	68	1	60	39
2000-01	175	0	106	69	0	61	39
2001-02	171	-2	106	67	-1	62	39
2002-03	175	-1	108	68	-0	62	39
2003-04	161	-2	102	61	-1	63	38
2004-05	169	2	102	65	1	60	38
2005-06	175	3	104	68	2	60	39
2006-07	175	1	104	69	1	60	40
2007-08	159	2	90	66	1	57	42
2008-09	153	1	83	69	1	54	45
2009-10	164	1	91	72	0	56	44
2010-11	174	1	97	77	0	56	44
2011-12	220	2	122	97	1	55	44
2012-13	166	1	84	81	1	51	49
2013-14	136	2	64	70	1	47	51
2014-15	177	2	87	88	1	49	50
2015-16	194	1	98	94	1	51	49
2016-17	211	2	109	100	1	52	47
2017-18	209	2	107	100	1	51	48
2018-19	211	2	107	102	1	51	48
2019-20	214	2	108	104	1	50	49

Source: Author's calculation

Note: $C_k = (\chi_k \rho_k \sqrt{I_2 I_{2k}})$, $c_k = (C_k / I_2)$

Table 2 shows the absolute and percentage contributions of agriculture, industry, and service sector to the aggregate interstate inequality as measured by I_2 index. The addition of these absolute sectoral

contributions gives the I_2 index itself. The table shows that in the period of 8th five year plan (1993-94 to 1996-97), the industrial sector had emerged as the biggest contributor to aggregate interstate inequality followed by service sector and agriculture sector. In this period the contribution of industrial sector ranges from 56 to 59 percent. Thus, the industrial sector was largely responsible for the changes in interstate income inequality in this period. After the industrial sector the service sector was the second largest contributor to aggregate inequality and the contribution of service sector ranges from 37 to 42 percent over the period from 1993-94 to 1996-97. It is interesting to note that the agriculture sector had the smallest contribution during this period as opposed to industry and services. The contribution of agriculture sector ranges from 2 to 3 percent during 8th five year plan.

In the period of 9th five year plan (1997-98 to 2001-02), the absolute as well as percentage contribution of industrial sector was continuously increasing, however, the rate of increase was very slow, whereas the percentage contribution of service sector remained almost constant (around 39 percent) despite the increase in its absolute contribution to aggregate inequality over this period. It is due the fact that the increase in the absolute contribution of service sector was so insignificant that it could not increase its percentage contribution. One interesting fact from Table 2 has been emerged that the percentage contribution (and also absolute contribution) of agriculture sector was either negative or zero over the period of 9th five year plan. A negative contribution implies that the agriculture sector acts towards reducing the interstate income inequality.

From 2002-03 to 2019-20, the absolute as well as percentage contribution of industrial sector roughly shows a declining trend while the contribution of service sector both in absolute and percentage terms has been increasing continuously. In 2019-20, the contributions of both sectors become almost equal. For instance, in 2019-20, the percentage contribution of industrial sector to aggregate inequality is decreased to 50 percent while the contribution of service sector is increased to 49 percent. On the other hand, the percentage contribution of agriculture sector to aggregate inequality is either one percent or below over the period from 2002-03 to 2019-20.

From perspective of economic policy, the following facts have been emerged from the sectoral decomposition of interstate income inequality as demonstrated in Table 2: First, agriculture sector has negligible contribution to aggregate income inequality in India. It implies that the faster growth of agriculture sector can ensure the more inclusive economic development of India since the growth of agriculture sector undoubtedly reduces the level economic inequality by providing the employment to the largest section of the rural population which constitutes approximately 70 percent of total population of India. Second, the role of industrial sector is continuously declining in economic growth as well as in aggregate income inequality. Third, in the post reforms period which is also known as the period of service led growth, the service sector is not only increasingly contributing to the economic development of the country but it also playing a dominant role in increasing the aggregate income inequality. This is due the fact that the employment potential of service sector is much lower than that of agriculture and industrial sector. Therefore the growth of service sector does not boost the process of employment generation. That is the reason why we sometimes call this 'service led growth' as 'jobless growth'. Here, it is important to mention that the results of sectoral decomposition of inequality of this study are completely consistent with the findings of Khan (2015) and Aneja, Barkha, & Banday (2021).

Concluding Remarks and Policy Recommendations

In this paper, we examined the trends in income inequalities across states in the post reforms period by estimating the family of generalized entropy indices. The results indicate that all of the entropy indices (including Gini-coefficient) exhibit an increasing trend in interstate income inequality in India in over the period from 1993-94 to 2019-20. However the speed of this changing dynamics of income inequality differs significantly in the various sub-periods subject changing government policy and various other exogenous factors. The economic reforms started in 1991 undoubtedly fasten up the speed of India's economic growth but at the cost of rising income inequality which seems to fade the dream of inclusive growth as documented in the draft of 11th and 12th five year plans. In order to understand the structure of India's economic inequality, the sectoral contribution in the rising income inequality over the period are also investigated. For this purpose we decomposed I_2 index into three mutually exclusive components where each component explains the absolute as well as relative contribution of agriculture, industry and service sector to the aggregate income inequality. It has been found that agriculture sector has negligible contribution to aggregate income inequality in India. It implies that the faster growth of agriculture sector can ensure the more inclusive economic development of India due to its high employment potential. It has been also found that the role of industrial sector is continuously declining in economic growth as well as in aggregate income inequality. Further, in the post reforms period which is also known as the period of service led growth, the service sector is not only increasingly contributing to the economic development of the country but it also playing a dominant role in increasing the aggregate income inequality. This is due the fact that the employment potential of service sector is much lower than that of agriculture and industrial sector. Therefore the growth of service sector does not boost the process of employment generation. That is the reason why we sometimes call this 'service led growth' as 'jobless growth'.

To address income inequality at the state level, tailored initiatives are crucial. Firstly, there is a need for State-specific Skill Development Programs, focusing on designing and implementing vocational training programs that align with each state's economic needs. This ensures that the local workforce possesses skills in demand by regional industries. Secondly, addressing the unique challenges of each state's farming community through agricultural reforms is vital. State-level initiatives, including improvements in irrigation, crop diversification, and enhanced market access, aim to bolster the resilience and sustainability of the agricultural sector. Thirdly, Customized Industrial and Infrastructure Development is essential. Tailoring plans to each state's strengths involves identifying and promoting sectors where a state has a comparative advantage, fostering economic growth in line with regional capacities. State-level policies promoting entrepreneurship, innovation, and the growth of small and medium enterprises contribute to local economic development. Additionally, implementing education reforms specific to each state is crucial. This includes initiatives to enhance school infrastructure, teacher quality, and access to educational resources, contributing to overall human capital development. Finally, Local Governance Empowerment is imperative for inclusive development. Strengthening local governance structures and encouraging community participation in decision-making processes, possibly through decentralization, fosters inclusive development initiatives.

Ethical approval and consent to participate

The research was conducted using data available in the public domain and did not include any human participants or animals. Therefore, no ethical approvals were required.

Consent for Publication

The authors of the study have consent and responsibility for submission to the journal.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Availability of Data and Material

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Authors Contributions

Parveen Kumar: - Conceptualization, Methodology, Analysis, and Writing

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Appendix

Table A: Decomposition of Absolute Sectoral Contributions to Inter-State Inequality

Year	Agriculture				Industry				Services			
	C_{Agri}	ρ_{Agri}	χ_{Agri}	I_2_{Agri}	C_{Ind}	ρ_{Ind}	χ_{Ind}	I_2_{Ind}	C_{Serv}	ρ_{Serv}	χ_{Serv}	I_2_{Serv}
1993-94	0.004	0.132	0.22	0.138	0.069	0.87	0.37	0.214	0.044	0.704	0.41	0.152
1994-95	0.0027	0.093	0.22	0.132	0.064	0.875	0.37	0.198	0.043	0.766	0.41	0.137
1995-96	0.0033	0.125	0.21	0.126	0.058	0.853	0.37	0.184	0.042	0.757	0.42	0.132
1996-97	0.0019	0.066	0.21	0.137	0.069	0.852	0.37	0.219	0.05	0.765	0.43	0.152
1997-98	-0.0015	-0.06	0.19	0.132	0.069	0.831	0.39	0.213	0.051	0.777	0.43	0.153
1998-99	-0.0001	-0.004	0.18	0.139	0.104	0.887	0.39	0.301	0.066	0.731	0.43	0.21
1999-00	0.0017	0.062	0.17	0.161	0.103	0.876	0.38	0.309	0.068	0.706	0.44	0.219
2000-01	0	0	0.17	0.156	0.106	0.875	0.39	0.156	0.069	0.699	0.45	0.156
2001-02	-0.0016	-0.064	0.17	0.147	0.106	0.877	0.39	0.31	0.067	0.677	0.45	0.22
2002-03	-0.0007	-0.031	0.15	0.151	0.108	0.879	0.4	0.307	0.068	0.694	0.45	0.218
2003-04	-0.0015	-0.064	0.16	0.146	0.102	0.875	0.4	0.291	0.061	0.675	0.44	0.205
2004-05	0.0021	0.091	0.15	0.154	0.102	0.868	0.41	0.287	0.065	0.717	0.44	0.206
2005-06	0.003	0.139	0.14	0.154	0.104	0.868	0.41	0.292	0.068	0.727	0.45	0.208
2006-07	0.0014	0.065	0.13	0.166	0.104	0.859	0.41	0.295	0.069	0.734	0.45	0.209
2007-08	0.002	0.094	0.13	0.164	0.09	0.833	0.41	0.264	0.066	0.758	0.46	0.189
2008-09	0.0013	0.069	0.12	0.157	0.083	0.813	0.4	0.255	0.069	0.79	0.48	0.182
2009-10	0.0008	0.046	0.11	0.158	0.091	0.832	0.41	0.267	0.072	0.782	0.48	0.192
2010-	0.0006	0.033	0.11	0.165	0.097	0.839	0.4	0.289	0.077	0.777	0.49	0.202

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2011-12	0.0018	0.088	0.11	0.186	0.122	0.877	0.4	0.348	0.097	0.795	0.49	0.249
2012-13	0.0011	0.059	0.11	0.169	0.084	0.84	0.38	0.263	0.081	0.84	0.51	0.189
2013-14	0.002	0.11	0.11	0.165	0.064	0.799	0.37	0.216	0.07	0.861	0.52	0.156
2014-15	0.0018	0.101	0.1	0.178	0.087	0.822	0.37	0.286	0.088	0.834	0.53	0.199
2015-16	0.0015	0.094	0.09	0.177	0.098	0.834	0.38	0.309	0.094	0.83	0.53	0.214
2016-17	0.0018	0.117	0.09	0.171	0.109	0.845	0.39	0.331	0.1	0.813	0.52	0.237
2017-18	0.0024	0.148	0.08	0.203	0.107	0.836	0.39	0.328	0.1	0.813	0.53	0.232
2018-19	0.0024	0.146	0.08	0.205	0.107	0.84	0.4	0.318	0.102	0.815	0.52	0.241
2019-20	0.0025	0.142	0.09	0.196	0.108	0.84	0.39	0.336	0.104	0.814	0.52	0.246

Source: Author's calculation

ρ_k = Sectoral correlation with aggregate income, χ_k = Sectoral share in aggregate income, I_{2k} = Sectoral inequalities

Table B: List of the states and Union Territories of India

Sr. No.	Name of the States
1	Andhra Pradesh, Arunachal Pradesh
2	Arunachal Pradesh
3	Assam
4	Bihar
5	Chhattisgarh
6	Goa
7	Gujarat
8	Haryana
9	Himachal Pradesh
10	Jharkhand
11	Karnataka
12	Kerala
13	Madhya Pradesh
14	Maharashtra
15	Manipur
16	Meghalaya
17	Mizoram
18	Nagaland
19	Odisha
20	Punjab

21	Rajasthan
22	Sikkim
23	Tamil Nadu
24	Telangana
25	Tripura
26	Uttar Pradesh
27	Uttarakhand
28	West Bengal
Union Territories	
1	Andaman and Nicobar Islands
2	Chandigarh
3	Dadra and Nagar Haveli and Daman and Diu
4	Lakshadweep
5	Delhi (National Capital Territory of Delhi)
6	Puducherry
7	Jammu and Kashmir
8	Ladakh

Note: - Meghalaya and Telangana have been excluded from this study. Additionally, our focus is narrowed down to only two union territories in India: Delhi and Puducherry.