GIFT DISCUSSION PAPER SERIES

2026

1/2026

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D.K. Srivastava

Gulati Institute of Finance and Taxation
Thiruvananthapuram, Kerala, India

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This article can be cited as D.K. Srivastava (2025). Equalization transfers in India and profiles of inequality (GIFT Discussion Paper Series 1/2026). *Gulati Institute of Finance and Taxation.*

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Equalization transfers in India and profiles of inequality

D.K. Srivastava[1]
Chief Policy Advisor at Ernst & Young (EY) India
Former Director, Madras School of Economics (MSE)
Member XII Finance Commission

[1] I would like to acknowledge the research inputs provided by my colleagues, Dr. Muralikrishna Bharadwaj, Tarrung Kapur and Ragini Trehan. Presented at Gulati Institute of Taxation and Finance on 17-December-2025

Abstract

Fiscal transfers to states in India have been guided by the equalization principle among other considerations. The outcomes of such transfers have been equalizing in relation to a number of dimensions including education and health outcomes, per capita state primary revenue expenditures and per capita consumption expenditures. There is also a decrease in the incidence of poverty. We juxtapose these outcomes with a profile of growing inequality in per capita real GSDP as well as per capita fiscal capacity as proxied by nominal GSDP. These two profiles show directionally opposite trends. We explore what causes these opposite movements and highlight the role of market forces in inducing spatial concentration patterns of capital stock and investment flows. We consider policy options to moderate or reverse this pattern of growing divergence in per capita incomes across states.

Key Words: Equalization, Gini inequality coefficient, Theil inequality index, Herfindahl Hirschman concentration ratio, capital stock, fiscal transfers, education and health, infrastructure.

1. Introduction

It is a privilege and honour for me to deliver this ninth I. S. Gulati Commemoration Lecture at the Gulati Institute of Finance and Taxation. It gives me an opportunity to pay my tribute to Professor Gulati's seminal contributions in the fields of fiscal federalism, taxation, international economics, decentralization and development. It also gives me an opportunity to join a sequence of eminent scholars who have earlier delivered lectures in this series. Prof. Gulati's policy footprint is well recognized among scholars of public finance and fiscal policy, planning and development, and fiscal federalism. I had the good fortune of meeting Prof. Gulati twice in the late phase of his distinguished career. He impressed me as an academic who was soft spoken, exhibited tremendous affection and respect for his fellow scholars and had very firm intellectual orientation and beliefs. I have chosen the subject of this presentation such that it provides me an opportunity to review the two themes closest to his heart namely, principles of fiscal transfers and evolution of interpersonal and interstate inequality in India. With the recent works of Piketty (2015) and Banerjee & Duflo (2003), analysis of inequality patterns has become a contemporary core concern of economists and policymakers.

It is useful to summarize the entire sequence of arguments detailed in this paper right at the outset. We recognize, first, that fiscal transfers in India have been guided largely by the principle of 'equalization' supplemented by a number of additional considerations. Second, over a long period of time, this orientation of fiscal transfers has delivered notable outcomes that have been progressively more equalizing in nature. Third, these fiscal transfers supplemented by various central and state policies have also led to a notable reduction in the incidence of poverty and reduction in

inequality of interpersonal and interstate per capita consumption expenditure. Next, we recognize that in spite of these positive developments, interstate inequality in per capita incomes and per capita fiscal capacities continues to increase. We explore the nature of and reasons for this trend. It has been possible to argue that in the context of interstate inequality in per capita incomes, there is growing divergence among groups of states although within these identifiable groups, inequalities are much lower. Next, we argue that these inequality trends depend largely on the existence of a common market which is a critical feature of India's federal structure that has led to concentration of capital stock and investment flows in certain regions of the country. There are few policy options that can be used to intervene in this market determined interplay of economic forces. Finally, we recognize that even the state level Fiscal Responsibility Legislations (FRLs) result in higher concentration of infrastructure facilities in the states that may already be prosperous.

This paper is divided into **seven** sections. Apart from the introductory section, section 2 provides a methodological prelude where the three methodologies used for empirical analysis in this paper are discussed namely, the Gini coefficient, Theil's entropy-based inequality measure and Herfindahl-Hirschman Index (HHI) of economic concentration. Section 3 summarizes the main features of the principles of equalization transfers and its practice in India by the Finance Commissions (FCs). Section 4 takes up the question as to what has been delivered in terms of outcomes through equalization transfers supplemented by relevant central and state policies. In this section, we examine trends of interstate inequality in a number of parameters including (i) per capita primary revenue expenditure excluding pensions and (ii) per capita health and education expenditures. Further, we analyse the trends

in tangible outcomes such as life expectancy and infant mortality rate with respect to health, and state wise number of graduates with respect to education. Section 5 looks at the trends in interstate inequality in per capita real GSDP and fiscal capacity which is measured by per capita nominal GSDP and notes the progressively increasing interstate inequality in these aggregates. In this section, we also supplement these positive trends of reducing inequality by taking note of significant reduction in the state wise poverty headcount ratios as also reduction in inequality in per capita consumption expenditure. We note that the opposite trends in the profiles of reducing interstate inequality in consumption expenditure, poverty, health and education outcomes and the progressively increasing trend of interstate inequality in per capita real and nominal GSDP and fiscal capacity, need to be explored further. This is covered in Section 6. We argue that the trend of increasing interstate inequality in per capita real and nominal GSDP is mainly due to market-based allocation of capital stock covering both private and public capital stock and corresponding investment flows. This is also reflected in outcomes such as in indicators of concentration in various infrastructure variables. In section 7, the concluding section, we argue that there are few policy parameters that can be used to intervene in this ongoing trend. In fact, state level FRLs strengthen this divergence promoting trend since the implicit rules imply higher per capita capital expenditure for states that have higher per capita GSDP.

2. Methodological prelude

Three prominent measures of inequality and economic concentration proposed in the literature are (1) Gini coefficient of inequality, (2) Theil index of inequality and (3) Herfindahl-Hirschman Index (HHI) of concentration. In this section, we examine their properties and usefulness in the study of profiles of interstate inequality with respect to critical economic and fiscal aggregates in India.

In this section, we briefly outline the key features of the three methodologies that we have used to measure trends in inequalities of relevant economic and fiscal aggregates.

Gini Coefficient: measuring inequality using Sen's axiomatic framework

In using the Gini coefficient for measuring inequality, we emphasize its relevance in terms of using a scheme of inter-personal weighting based on ordinal rank weights. This is useful when the subjective sense of relative deprivation of individuals is involved such as in the context of per capita income and expenditure inequality.

We consider a community of 'n' people whose per capita consumption expenditures are arranged in a non-decreasing order. In order to distinguish between lower, middle and high income/expenditure groups (LIG, MIG, HIG), we indicate the dividing lines by y_l for LIG, and y_q for MIG.

Thus, per capita consumption expenditures are written as:

$$y_1 \leq y_2 \leq \cdots \leq y_l \leq y_{l+1} \leq \cdots \leq y_q \leq y_{q+1} \leq \cdots \leq y_n$$

Thus, we divide the entire population into three groups namely 1) LIG covering individuals from 1 to *l*, 2) MIG covering individuals from *l*+1 to q and 3) HIG covering individuals from q+1 to n.

Total population (N) is thus divided into three groups as indicated below.

In the LIG: $\sum N_i = L$ where i varies from 1 to *l*

MIG: $\sum N_i = Q$ where i varies from *l*+1 to q

HIG: $\sum N_i = H$ where i varies from q+1 to n

Total population for all groups can be written as

$$\sum_{i=1}^{n} N_i = N = L + Q + H \quad (1)$$

The overall per capita mean expenditure is given by μ where

$$\mu = \sum_{i=1}^{n} \frac{N_i.y_i}{N_i} \quad (2)$$

Similarly, we can write average per capita expenditure for each group as:

$$\mu_l = \sum_{i=1}^{l} \frac{N_i.y_i}{N_i} \quad (3)$$

$$\mu_q = \sum_{i=l+1}^{q} \frac{N_i.y_i}{N_i} \quad (4)$$

$$\mu_h = \sum_{i=q+1}^{n} \frac{N_i.y_i}{N_i} \quad (5)$$

μ can be seen as the weighted sum of μ_l, μ_q and μ_h as follows:

$$\mu = \frac{L.\mu_l + Q.\mu_q + H.\mu_h}{N} \text{ where } L + Q + H = N \quad (6)$$

Sen (1974, 1976) had proposed an axiomatic framework for measuring inequality as follows.

Axiom M (Monotonic welfare): The relation '>' greater than defined on the set of individual welfare numbers $\{W_i(\underline{y})\}$; for any income configuration, $\underline{y}$ is a strict complete ordering and the relation '>' greater than defined on the corresponding set of individual incomes $\{y_i\}$ is a sub-relation of the former, that is, for any i, j if $y_i > y_j$, then $W_i\left(\underline{y}\right) > W_j\left(\underline{y}\right)$.

Axiom R (Ordinal rank weights): The weight w_i on the income of y_i equals the rank order of *i* in the interpersonal ordering of the whole population, that is,

$$w_i = n + 1 - i \qquad (7)$$

The postulation of ordinal rank weights is critical in Sen's analysis. This has two important implications. First, individuals are ranked according to non-descending order of income. This implies that between two individuals, i and j, if $y_i < y_j$, the weight attached to y_i would be higher than that attached to y_j. If $y_i = y_j$, then the weight attached to the two individuals would be the same. In deriving the respective weights, the magnitude of the difference between y_i and y_j does not matter. It is only their respective ranks that matter. The second feature is that each individual is assigned a rank within the whole population, that is to say that high positioning is relative to everybody else in the population. In other words, it is material as to how many individuals are richer than a particular individual and how many are poorer. This weighting scheme applies only when the entire population is used in assigning weights to individual incomes or expenditures.

Axiom N_1 (Normalization 1): If all incomes are equal to mean income, the index of inequality (I) is zero, that is,

$$I = 0 \ \ when\ y_1 = y_2 = \cdots = \mu \qquad (8)$$

Axiom N_2 (Normalization 2): If only one individual has all the income and the remaining have zero income then $I = 1$ which is its maximum value. Thus, the inequality coefficient varies between 0 and 1. Sen was able to show that the Gini coefficient of income inequality can be written as a normalized weighted sum of differences of individual incomes from the mean income. The weights are the ordinal rank weights as given in equation (7).

Thus, the Gini coefficient of income inequality can be written as follows:

$$I = \frac{2}{\mu.n^2}.\sum_{i=1}^{n}(n+1-i).(\mu - y_i) \quad (9)$$

Thus, the inequality coefficient is a normalized weighted sum of per capita income deviations from mean income where the weights are given by (n+1-*i*) where n is the population indicating that the individual with the lowest income is given the highest weight in a scheme of ordinal rank weights.

It may be mentioned that the changes in inequalities can also be studied by using the Theil index of inequality which has an implicit alternative scheme of weighting. In this paper, we mention comparable results for per capita income inequality and its group-wise decomposition using a Theil index. The construction of the groups of states for this part is somewhat different but substantiate the same finding namely, that between-group inequality contributes significantly more than the within-group inequality.

Theil's entropy-based inequality index

Theil index is a statistic primarily used to measure inequality in income and other economic parameters. The Theil index (T_T) is the same as redundancy in information theory which is the maximum possible entropy of the data minus the observed entropy. It is a special case of the generalized entropy index. In the literature, it has been viewed alternatively as a measure of redundancy, lack of diversity, isolation, segregation, inequality, non-randomness, and compressibility.

We will utilise the following definitions in defining the Theil income inequality index for a given population.

The available distribution of individual incomes for a given year is:

$$x_{1,}x_2, \ldots., x_N$$

Given these, we define

$$T_T = \sum_{i=1}^{N} \frac{x_i}{N.\mu} \ln\left(\frac{x_i}{\mu}\right) \qquad (10)$$

where, $\frac{x_i}{N.\mu}$ is the share of the income of the *ith* individual in the total income of all individuals; μ is the average income of the population; N is the total population.

Suppose the individuals whose incomes are $x_{1,}x_2, \ldots., x_N$ reside in n states and we also assume that within the state, their incomes are centred at the mean income of the state, then we divide $x_{1,}x_2, \ldots., x_N$ into the following groups:

Thus,

In state 1 we have N_1 individuals each having an income of μ_1

In state 2 we have N_2 individuals each having an income of μ_2…

In state n we have N_n individuals each having an income of μ_n

These individuals sum up to N such that

$$N = N_1 + N_2 + \cdots + N_n \quad (11)$$

We can also consider the construction of the Theil index for a population divided into several states. The underlying assumption is that the incomes of individuals within a state are centred at the average income of the state. We now consider the following definitions.

Let there be n states denoted by $S_1, S_2, \ldots, S_n$

The average per capita GSDP of the i^{th} state is given by μ_i and its population by N_i

The share of a state in all-state GSDP is given by a_i, where

$$a_i = \frac{N_i \mu_i}{N.\mu} \quad (12) \text{ where } i=1,2,\ldots,n$$

The all-state average per capita GSDP is μ where

$$\mu = \frac{\sum_{i=1}^{N} x_i}{N} = \frac{\sum_{i=1}^{n} N_i \mu_i}{N} \quad (13)$$

Then, for the states extending from 1 to n, considering that the incomes of individuals within a state are centred at the per capita average income of the state, we can define the entropy-based income inequality index I as follows:

$$I = \sum_{i=1}^{n} \frac{N_i \mu_i}{N.\mu} . \ln\left(\frac{\mu_i}{\mu}\right) \qquad (14)$$ where i=1,2,...,n

$$I = \frac{1}{N.\mu}\left[N_1\mu_1 \ln\left(\frac{\mu_1}{\mu}\right) + N_2\mu_2 \ln\left(\frac{\mu_2}{\mu}\right) + \cdots + N_n\mu_n \ln\left(\frac{\mu_n}{\mu}\right)\right] \qquad (15)$$

where i=1,2,...,n

A third index that we have found useful is a measure of concentration of economic aggregates. For this purpose, we have used the HHI as briefly discussed below.

HHI: measuring concentration

The HHI is a widely used measure of concentration, originally developed to assess market structure and competition (Herfindahl, 1950; Hirschman, 1945) by summing the squared shares of firms, sectors, or regions. While traditionally applied in antitrust analysis, HHI is increasingly used in broader economic contexts.

For deriving the HHI, we consider a universe of 'n' participating states.

Thus, for i=1 to n, the HHI is defined as

$$H_1 = \sum_{i=1}^{n} \left(\frac{Y_i}{\sum Y_i}\right)^2 = \frac{1}{(\sum Y_i)^2} \sum_{i=1}^{n} Y_i^2 \quad (16)$$

If $Y_i/\Sigma Y_i = y_i$ i.e., the share in output of the ith state, then the index can simply be written as $\sum_{i=1}^{n} y_i^2$. We consider the total economic space being shared amongst individual states as consisting of the sum of their individual real GSDPs, measured at 2011-12 prices.

The minimum value of the index would be $\frac{1}{n}$ when there is no concentration, i.e., all participating states obtain equal shares. The maximum value of the index would be 1, when one state occupies

the entire output, and the share of other states is zero. As the number of participating states increases indefinitely, the minimum value of H_1 i.e., $\frac{1}{n}$ tends to zero.

An increase in the number of states should lead per se to a decrease in centralization because the same output is now being shared with a greater number of participating states. Therefore, a desirable property of the index would be $\frac{\partial H_1}{\partial n} < 0$. Thus, the larger the number of participating states, the lower the magnitude of overall concentration index.

In Srivastava and Aggarwal (1979), three variants of the HHI were considered and compared in detail as summarized below.

Table 1: HHI: Alternative Definitions and Features

Name	Definition	Range	Minimum Value	Maximum Value	Condition for $\frac{\partial H}{\partial n} < 0$
H_1	$\Sigma_i r_i^2$	$1-\frac{1}{n}$	$\frac{1}{n}$	1	$\frac{\partial H_1}{\partial n} < 0$
H_2	$\frac{n}{n-1}\Sigma_i r_i^2$	1	$\frac{1}{n}-1$	$\frac{n}{(n-1)}$	$\frac{\partial H_1}{\partial n} < \frac{H_1}{n(n-1)}$
H_3	$\frac{n}{n-1}(\Sigma_i r_i^2 - 1)$	1	0	1	$\frac{\partial H_1}{\partial n} < \frac{H_1 - 1}{n(n-1)}$

Source: based on Srivastava and Aggarwal (1979)

With a reasonable number of states in our analysis, we have used H_1 particularly since it is useful for the purposes of decomposition.

It can be shown that H_1 can be decomposed in a way that highlights the relative contributions of groups of states (See Srivastava et al.,

2025d). We have divided the Indian states in terms of four groups namely, GS1, GS2, NEH1 and NEH2 as detailed in Appendix 1.

3. Pursuit of equalization in fiscal transfers

We note that fiscal transfers from the Centre to the states have been largely guided by the principle of equalization that makes up for the deficiency in fiscal capacity without underwriting deficiency in fiscal effort. This is mainly delivered through relative weights assigned to various criteria used in the tax devolution formula and some components of normatively or quasi-normatively determined grants.

Fiscal transfers in India have been broadly overseen, over a long period of time, by India's FCs. Equalization in fiscal transfers has been highlighted as a guiding principle by a number of recent FCs. In India's context, equalization can be considered to have three dimensions. The first relates to equalization of fiscal capacity. The second relates to neutralization of cost disabilities and the third relates to the compensation for externalities arising from contribution to environmental wellbeing such as through maintaining forests. These principles have been largely translated into practice through a weighting structure associated with tax devolution which has sometimes been supplemented by normatively or quasi-normatively determined deficit grants and selected specific purpose grants. In this regard, the FC12 Report had observed:

"Equalization transfers aim at providing citizens of every state a comparable standard of services provided their revenue effort is also comparable. In other words, equalization transfers neutralize deficiency in fiscal capacity but not in revenue effort. Under such an approach, transfers should be determined on a normative basis instead of merely filling up gaps arising from the projections of

revenues and expenditures based on historical trends." - Paragraph 2.4 of FC12

The FC12 highlighted that some of the earlier FCs had also recognized the importance of an equalization approach and the difficulties with a gap-filling approach.

"…As noted by some of the earlier finance commissions also, there are adverse incentives associated with a 'gap filling' approach where the case for larger transfers would depend merely on a larger gap in the past without reference to whether available revenue capacity was adequately exploited or whether there was an undue growth in expenditures. The normative approach can effectively neutralize such adverse incentives as states are assessed in terms of revenues that they ought to raise given their respective capacities. Similarly, expenditures are assessed on the basis of needs consistent with an average or minimum acceptable level of service and the relevant cost norms and not driven by the past history of expenditures." – Paragraph 2.4 of FC12

In some of the well-established federations such as Canada and Australia, the equalization principle is followed in the determination of fiscal transfers and is defined below:

"Parliament and the government of Canada are committed to the principle of making equalization payments to ensure that provincial governments have sufficient revenues to provide reasonably comparable levels of public services at reasonably comparable levels of taxation." - Subsection 36(2) of the Constitution Act, 1982

"State governments should receive funding from the pool of goods and services tax [can apply to any relevant sharable pool] such that, after allowing for material factors affecting revenues and expenditures, each would have the fiscal capacity to provide services and the associated infrastructure at the same

standard, if each made the same effort to raise revenue from its own sources and operated at the same level of efficiency." - Commonwealth Grants Commission, (Australia), 2015

Fiscal capacity equalization can be defined as follows.

Suppose we consider the overall tax base of a state as determined by per-capita GSDP at current prices (y_i). Suppose the average or benchmark tax-GSDP ratio is α. Then the per-capita tax revenue of state i, which is determined normatively, would be given by:

$r_i^* = \alpha * y_i$ (17)

As compared to this, the actual tax revenue is given by:

$r_i = a_i * y_i$ (18) where the tax-GSDP ratio of the state i is denoted by a_i.

Fiscal capacity equalization implies

$t_i = \alpha y_s - \alpha y_i$ (19) where per-capita transfer is denoted by t_i, the average tax effort is represented by α, and the benchmark fiscal capacity which may be set at the mean income is denoted by y_s.

Since, in the determination of the normative per-capita revenue, average tax effort is used, equalization does not make up for the deficiency in tax effort but provides for the deficiency in fiscal capacity. It is thus consistent with the principles of both equity and efficiency.

Two variations can be considered relevant for revenue side equalization. First, GSDP can be augmented/ substituted by other determinants of the state-level tax base such as per-capita

consumption, per-capita remittances, non-agricultural GSDP etc. A second variation can be by distinguishing between groups of states if there is reason to believe that the average tax effort of two or more groups of states can be differentiated on valid grounds and one group of states may be allowed a lower average tax effort as compared to the other group.

The expenditure side of the equalization approach is discussed below.

In determining per-capita expenditure for a given expenditure head, allowance is to be made for valid user and cost disabilities. User disabilities refer to demand-side disabilities. For example, in an Indian state where the share of population of the children and/or the share of old-age population is relatively higher than the average, there may be additional per-capita health costs. Similarly, if the share of population of a certain disadvantaged group, for example, share of scheduled caste or scheduled tribe or other backward classes is higher, a higher per-capita cost for education or health may be provided. Cost-side disabilities, on the other hand, refer to higher input costs for providing the same level of service as compared to the average per-capita cost because of factors such as the nature of the terrain or density of population. Per-capita costs may be higher for hilly areas, forest areas or areas which suffer from excessive rainfall. Similarly, unit costs may be high in areas which are sparsely populated. Both user and cost disabilities need to be considered service by service. Suppose we refer to extra per-capita expenditure due to user disabilities as u_i and those with respect to cost disabilities as c_i for the i^{th} state as compared to the average or benchmark per-capita cost (e_s) for a particular service, then

$$\gamma_i = (e_s + u_i + c_i)/e_s \qquad (20)$$

Thus,

$e_i^* = (\gamma_i . e_s)$ (21) where γ_i can be equal to or more than 1

This approach is consistent with efficiency and equity because it keeps per-capita costs at the efficient level, e^* (efficiency) but permits valid departures related to user and cost disabilities (equity).

The expenditure side of equalization is particularly important for a country where service standards may differ widely across states both because of differential fiscal capacities and large unit cost differences in provision of services. On the expenditure side, this approach may be applied service by service. It may be relevant to divide the states into broad groups characterised by common features such as hilly and small states as compared to medium to large size states and consider different group averages for respective benchmarking.

As an example, the FC12 had introduced equalization grants for education and health using a preference normalization approach (See Chapter 12 of FC12 Report). A brief summary of their approach is given below.

Per-capita normative expenditure on, say, education (group average): $e^* = a^* . r^*$ (22)

where a^* is the ratio of per-capita group education expenditure divided by per-capita group total revenue expenditure (called group preference ratio) and r^* is the per-capita group total revenue expenditure.

For the i^{th} state, per-capita education expenditure (e_i) is given by

$$e_i = a_i . r_i \qquad (23)$$

where a_i is preference ratio for state i and r_i is the per-capita total revenue expenditure for this state.

In cases where $e^* > e_i$, we may need to increase the per-capita expenditure of e_i. For this purpose, we may write

$$e^* - e_i = (a^* . r^*) - (a_i . r_i) = (a^* . r^*) - (a^* . r_i) + (a^* . r_i) - (a_i . r_i)$$

$$e^* - e_i = (a^* - a_i) . r_i + a^* . (r^* - r_i) \qquad (24)$$

The first term $(a^* - a_i) . r_i$ indicates deficiency in the prioritization (preference ratio) for education of state 'i'. This difference is due to deficient prioritization by the concerned state and need not be allowed. The second term $a^* . (r^* - r_i)$ indicates the deficiency due to fiscal capacity. This may be taken into account.

In India, the delivery of equalization has been partial (See, for example, Trehan and Srivastava, 2025). It has mainly been introduced through explicit components of the tax devolution formulae and some normative elements in the determination of general-purpose grants supported by selected specific purpose grants. The relative importance of the equalizing components of the devolution formulae can be highlighted in the context of the weights used by some of the recent FCs. Three main criteria that have served the objective of delivering equalizing transfers are (a) income/fiscal capacity distance criterion, which has been given the highest weight from FC10 onwards although this weight has been reduced over time (Srivastava et al., 2024), (b) area criterion, which reflects inter-state cost differentials and (c) forest cover, which captures the contribution of a state to environmental externalities where the cost borne by the states remain unaccounted for. A

detailed discussion of these roles of the different criteria are available in Rangarajan and Srivastava (2024), and Srivastava et al. (2025a, b).

Table 2: Relative weights for different tax devolution criteria (%): FC10 to FC15 (2)

#	Criteria	FC10 (Alt. scheme)	FC11	FC12	FC 13	FC 14	FC 15 (1)	FC 15 (2)
1	Population	20	10	25	25	17.5	15.0	15.0
2	Demographic change			-	-	10	12.5	12.5
3	Income/fiscal capacity distance	60	62.5	50	47.5	50	45.0	45.0
4	Area	5	7.5	10	10	15	15.0	15.0
5	Forest cover			-	-	7.5	10.0	10.0
6	Tax effort	10	5.0	7.5	-	-	2.5	2.5
7	Fiscal discipline		7.5	7.5	17.5	-	-	-
8	Index of Infrastructure	5	7.5					

Source (basic data): Finance Commission Reports [FC12 to FC15 (2)]

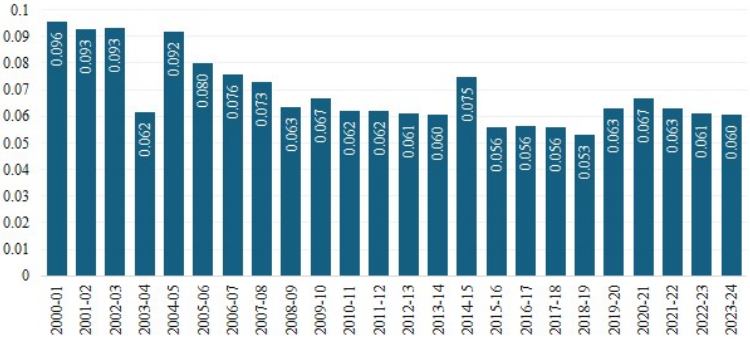
4. What have equalizing transfers delivered?

With a continuing emphasis on equalization transfers, we examine whether these resulted in outcomes that delivered progressive reduction in interstate inequality in the relevant dimensions. The answer appears to be positive with respect to a number of variables including per capita primary revenue expenditures excluding pensions, per capita health and education expenditures and related outcomes measured in terms of suitable indicators.

The outcomes of these equalizing transfers in combination with states' own fiscal resources are reflected in reducing inequality in certain relevant indicators. Thus, in terms of fiscal aggregates, one

relevant indicator is per-capita primary revenue expenditures excluding pensions. We have looked at the time profile of the inequalities in state level per-capita primary revenue expenditures excluding pensions using Theil's entropy-based inequality index. Over the period 2000-01 to 2023-24, the index covering all the 28 states shows that inequality in per-capita primary revenue expenditure has broadly come down over time (Chart 1). It is only 2019-20 onwards that there is marginal increase in the inequality index.

Chart 1: Interstate inequality measured by Theil index: per-capita primary revenue expenditure excluding pensions



Source (basic data): RBI State Finances, MoSPI and Author's own estimates
Notes: (1) In 2014-15, with the bifurcation of the erstwhile Andhra Pradesh state into Andhra Pradesh and Telangana, the extent of inequality experienced a temporary spike.
(2) Jammu and Kashmir has been excluded from this analysis.
(3) UP played a significant role in the sudden reduction in the inequality index in 2003-04. In this year, some states including UP got the benefit of debt restructuring recommended by FC12 reducing their interest payments and increasing their primary revenue expenditures. UP also got the benefit of power sector debt write-off.

Table 3 shows the decomposition of the overall Theil inequality index into two broad categories namely, within group inequality and between group inequality. It is seen that the percentage contribution of within group inequality to total inequality has initially fallen up to 2006-07 after which it has shown an increase. Between group inequality has a higher contribution share to the overall inequality and broadly shows a falling trend 2007-08 onwards. In this exercise, states have been classified into four groups (GS1, GS2, NEH1 and NEH2) based on their per capita nominal GSDP and nature of terrain (For details, see Appendix 1).

Table 3: Contribution of within and between group inequality in per-capita primary revenue expenditure excluding pensions

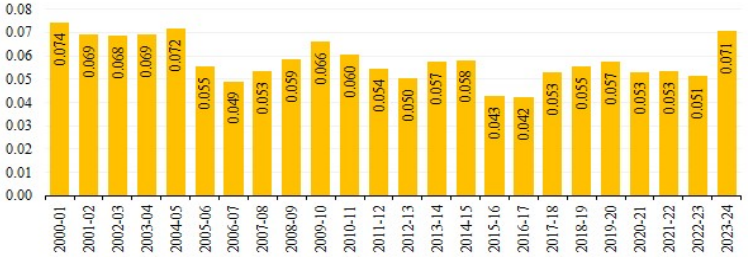
Year	Within group	Between groups	*Within group*	*Between groups*
	Contribution to overall index	**Contribution to overall index**	*% share*	*% share*
2000-01	0.0403	0.0553	42.2	57.8
2001-02	0.0353	0.0573	38.2	61.8
2002-03	0.0317	0.0614	34.1	65.9
2003-04	0.0247	0.0371	40	60
2004-05	0.0276	0.0642	30.1	69.9
2005-06	0.0245	0.0555	30.6	69.4
2006-07	0.0211	0.0544	27.9	72.1
2007-08	0.0208	0.0521	28.6	71.4
2008-09	0.0204	0.043	32.2	67.8
2009-10	0.0191	0.0478	28.6	71.4
2010-11	0.0183	0.0438	29.4	70.6
2011-12	0.0211	0.0411	34	66
2012-13	0.0207	0.0402	34	66
2013-14	0.0241	0.0363	39.9	60.1
2014-15	0.0306	0.0442	40.9	59.1
2015-16	0.0249	0.0308	44.7	55.3
2016-17	0.0268	0.0295	47.6	52.4
2017-18	0.0281	0.028	50.1	49.9
2018-19	0.0249	0.0283	46.8	53.2

Year	Within group	Between groups	*Within group*	*Between groups*
	Contribution to overall index	Contribution to overall index	*% share*	*% share*
2019-20	0.0309	0.0321	49	51
2020-21	0.0281	0.0386	42.2	57.8
2021-22	0.0285	0.0346	45.2	54.8
2022-23	0.0256	0.0356	41.8	58.2
2023-24	0.0326	0.0279	53.9	46.1

Source (basic data): RBI State Finances, MoSPI and Author's own estimates
Notes: Refer to notes under Chart 1

The primary revenue expenditures undertaken by the states deliver equalizing outcomes for certain merit services such as education and health which have significant externalities. In other words, spending on these heads in one state has benefits for other states as population of that state becomes more mobile. Chart 2 shows a profile of broadly reducing inequality pattern in per capita education expenditure although it has a wavy pattern. After 2016-17, for a number of years, it increased and then fell marginally although the Theil index remained higher than the minimum levels reached in 2015-16 and 2016-17.

Chart 2: Interstate inequality as measured by Theil Index: per capita revenue expenditure on education



Source (basic data): RBI and Author's own estimates

Notes: (1) In 2014-15, with the bifurcation of the erstwhile Andhra Pradesh state into Andhra Pradesh and Telangana, the extent of inequality fell.
(2) Jammu and Kashmir has been excluded from this analysis

In the case of health also, there is a wavy pattern with minimum levels of inequality reached in 2006-07 and 2007-08 (Chart 3) after which it increased and then fell again. By 2023-24, the Theil inequality index was 0.056, same as that in 2007-08.

Chart 3: Interstate inequality as measured by Theil Index: per capita revenue expenditure on health

Source (basic data): RBI and Author's own estimates
Notes: (1) In 2014-15, with the bifurcation of the erstwhile Andhra Pradesh state into Andhra Pradesh and Telangana, the extent of inequality fell.
(2) Jammu and Kashmir has been excluded from this analysis.

Apart from a study of reduced inequality in per capita fiscal capacity as measured by primary revenue expenditure excluding pensions, it is also useful to highlight its impact on the trend of inequality in physical outcomes in health and education sectors. Table 4 shows that across the 17 states covered here, there was a tangible increase in life expectancy which in terms of years averaged nearly 7 years amounting to a 10.9% increase in overall terms. Due to data unavailability, all states have not been covered here.

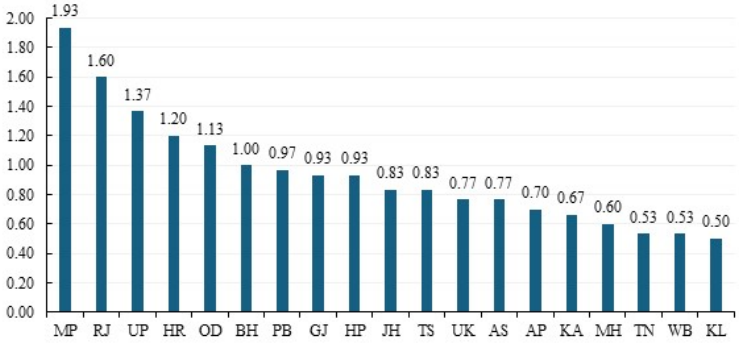
Table 4: Change in life expectancy at 1-5 years: 1999-2003 to 2019-23

State	1999-2003	2019-23	Increase in life expectancy (years)	% increase in life expectancy
Andhra Pradesh	63.9	70.7	6.8	10.6
Assam	58.6	68.6	10.0	17.1
Bihar	64.0	69.3	5.3	8.3
Gujarat	65.0	70.4	5.4	8.3
Haryana	65.7	68.8	3.1	4.7
Himachal Pradesh	69.1	74.4	5.3	7.7
Jammu & Kashmir	66.0	74.4	8.4	12.7
Karnataka	65.4	70.0	4.6	7.0
Kerala	72.5	75.1	2.6	3.6
Madhya Pradesh	58.8	67.6	8.8	15.0
Maharashtra	66.7	72.8	6.1	9.1
Odisha	59.7	70.5	10.8	18.1
Punjab	67.6	70.8	3.2	4.7
Rajasthan	63.8	70.4	6.6	10.3
Tamil Nadu	66.2	73.4	7.2	10.9
Uttar Pradesh	60.1	68.0	7.9	13.1
West Bengal	66.2	72.5	6.3	9.5
All India	**63.4**	**70.3**	**6.9**	**10.9**

Source (basic data): RBI Handbook of Statistics on Indian States (https://www.rbi.org.in/scripts/PublicationsView.aspx?id=23456)

For the infant mortality rate (1-4 years), as shown in Chart 4, the range however is rather large from 0.5 for Kerala to 1.93 for Madhya Pradesh during 2021 to 2023. In this case also, the more developed states show a better reading for the indicator with relatively lower IMRs for Maharashtra, Tamil Nadu, West Bengal and Kerala.

Chart 4: State-wise Infant Mortality rate (1-4 years) during 2021-23 (average): selected states



Source (basic data): EPWRFITs database

In Tables 5 and 6, we look at the different dimensions of inequality in regard to the number of undergraduates and postgraduates as percentage of state's total population. The overall inequality coefficient based on the Theil measure as given in column (4) shows fairly low and in general, falling levels of inequality. Most of this inequality is due to within group inequality rather than between group inequality.

Table 5: Within- and between-group inequalities and their shares in overall inequality as measured by Theil index: number of undergraduates and postgraduates as % of state's total population

Years	Between group inequality	Within group inequality	Overall inequality	% share in overall inequality	
				Between group inequality	Within group inequality
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
2012-13	0.0100	0.0250	0.0350	28.7	71.3
2013-14	0.0111	0.0272	0.0383	29.0	71.0
2014-15	0.0082	0.0296	0.0378	21.7	78.3
2015-16	0.0082	0.0261	0.0343	24.0	76.0

Years	Between group inequality	Within group inequality	Overall inequality	% share in overall inequality	
				Between group inequality	Within group inequality
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
2016-17	0.0069	0.0266	0.0335	20.6	79.4
2017-18	0.0080	0.0305	0.0384	20.7	79.3
2018-19	0.0078	0.0280	0.0358	21.8	78.2
2019-20	0.0077	0.0243	0.0320	24.0	76.0
2020-21	0.0055	0.0192	0.0246	22.2	77.8

Source (basic data): EPWRFITs database

Notes: (1) Data for the state of Telangana is available 2012-13 onwards.

(2) Jammu and Kashmir has been excluded from this analysis.

Table 6 shows that in terms of relative contribution of different groups, the highest contribution to within group inequality comes from the GS1 group followed by that from GS2. Within group inequalities are the lowest in the NEH2 group. On the whole, interstate inequality in the production of undergraduates and postgraduates is quite low.

Table 6: Group-wise contribution to within group inequality measured using Theil index: number of undergraduates and postgraduates as % of state's total population

Years	Group-wise inequality contribution					% contribution in within-group inequality			
	GS1	GS2	NEH1	NEH2	Within group inequality	GS1	GS2	NEH1	NEH2
2012-13	0.0124	0.0106	0.0011	0.0009	**0.0250**	49.8	42.5	4.3	3.4
2013-14	0.0166	0.0088	0.0014	0.0004	**0.0272**	61.0	32.2	5.3	1.5
2014-15	0.0209	0.0076	0.0009	0.0002	**0.0296**	70.6	25.7	3.0	0.6

2015-16	0.0182	0.0070	0.0007	0.0001	**0.0261**	69.8	26.9	2.8	0.5
2016-17	0.0174	0.0085	0.0005	0.0002	**0.0266**	65.4	32.1	1.9	0.6
2017-18	0.0212	0.0085	0.0005	0.0002	**0.0305**	69.7	28.0	1.6	0.6
2018-19	0.0185	0.0088	0.0005	0.0002	**0.0280**	66.0	31.5	1.8	0.7
2019-20	0.0145	0.0087	0.0009	0.0002	**0.0243**	59.8	35.8	3.6	0.8
2020-21	0.0099	0.0082	0.0009	0.0002	**0.0192**	51.9	42.7	4.5	0.9

Source (basic data): EPWRFITs database

Notes: (1) Data for the state of Telangana is available 2012-13 onwards.

(2) Jammu and Kashmir has been excluded from this analysis.

5. Trends in inter-state inequality in per-capita real and nominal GSDP

Continuing working on inequality profiles, we take note of growing interstate inequality in per capita real and nominal GSDP, the latter being a proxy for fiscal capacity. We also take note of progressively falling inequality in consumption expenditure for which data for selected years is available and a fast pace of reduction of incidence of poverty in recent years.

There is an extensive literature on issues of convergence of growth across states. Often, the conclusions differ – while some argue that there is divergence in India's inter-state growth profile, others are in favour of the idea of club convergence. The existing literature establishes that starting from an initial situation, income convergence is expected across countries as the marginal productivity of capital falls in the initially richer countries and increases in the relatively poorer countries. As capital moves from the richer to the poorer countries, convergence in per capita income is expected. However, such a process may take considerable time to get initiated. Some important studies in the Indian context include Rao, Shand, and Kalirajan (1999); Hembram, Maji, and

Haldar (2019); Bandyopadhyay (2003, 2012); Roy, Sen and Sanyal (2019); Akram and Rath (2021) and Kar, Jha, and Kateja (2011).

We examine trends in inter-state inequality in terms of per capita real and nominal GSDP. Table 7 shows the estimated inter-state Gini coefficients with respect to per-capita real GSDP (per-capita income). The underlying assumption in this estimation is that all individuals in a state are centred on the mean per-capita GSDP of that state. The inter-state Gini coefficient of per-capita income has been rising over time indicating growing income inequality. We have divided the states into three broad groups namely, low-, middle- and high-income groups. When the Gini coefficient of per capita income is decomposed in order to assess the contribution of between-group inequality vis-à-vis. within-group inequality, it is clear that the between-group inequality has a very high contribution, ranging from 86% to 90.3%, to the overall inequality. In fact, within-group inequality magnitudes and their contributions are quite low.

Table 7: Interstate inequality in per-capita real GSDP: Gini coefficient

Year	Gini (Per-capita real GSDP)	Between group inequality	Within group inequality	% contribution of between group inequality	% contribution of within-group inequality
1999-00	0.212	0.183	0.030	86.0	14.0
2000-01	0.212	0.191	0.021	90.3	9.7
2001-02	0.214	0.189	0.025	88.2	11.8
2002-03	0.221	0.196	0.025	88.8	11.2
2003-04	0.223	0.198	0.025	88.8	11.2

Year	Gini (Per-capita real GSDP)	Between group inequality	Within group inequality	% contribution of between group inequality	% contribution of within-group inequality
2004-05	0.229	0.198	0.031	86.5	13.5
2005-06	0.245	0.218	0.027	88.9	11.1
2006-07	0.251	0.226	0.025	90.0	10.0
2007-08	0.257	0.226	0.031	87.8	12.2
2008-09	0.252	0.219	0.033	87.1	12.9
2009-10	0.257	0.224	0.033	87.3	12.7
2010-11	0.260	0.228	0.032	87.6	12.4
2011-12	0.261	0.228	0.032	87.6	12.4
2012-13	0.264	0.232	0.032	87.8	12.2
2013-14	0.268	0.236	0.032	88.2	11.8
2014-15	0.274	0.242	0.032	88.4	11.6
2015-16	0.277	0.245	0.032	88.4	11.6
2016-17	0.278	0.246	0.031	88.7	11.3
2017-18	0.282	0.252	0.030	89.3	10.7
2018-19	0.284	0.251	0.034	88.1	11.9
2019-20	0.288	0.254	0.034	88.3	11.7
2020-21	0.289	0.258	0.031	89.4	10.6
2021-22	0.290	0.259	0.031	89.4	10.6
2022-23	0.291	0.261	0.030	89.8	10.2
2023-24	0.289	0.260	0.028	90.2	9.8

Source (basic data): MoSPI and Author's own estimates

Chart 5 shows a pattern of growing inequality in per-capita income and highlights the relative contribution of the between-group and within-group components of the Gini coefficients. Over the years, we observe only two years where inequality in terms of the Gini coefficient has fallen: (1) from 2007-08 to 2008-09, and (2) from 2022-23 to 2023-24.

Chart 5: Inequality index for per-capita real GSDP (Gini coefficient): decomposition into between and within-group relative contributions

Source (basic data): MoSPI and Author's own estimates

Table 8 shows the Gini coefficients of the three groups of states namely, lower-, middle- and high-income states. In these three groups, we have considered 9 states in the low-income group, 10 states in the middle-income group and 9 states in the high-income group[2]. The highest intragroup inequality amongst these three groups is in the lower-income group followed by that in the middle-income group and it is quite low for the high-income group (Table 7). Further, for the lower-income group, inequality increases first

[2] Broad classification of states based on 2023-24 per-capita real GSDP - Low Income: Bihar, Uttar Pradesh, Manipur, Jharkhand, Madhya Pradesh, West Bengal, Meghalaya, Assam, Nagaland; Middle Income: Chhattisgarh, Rajasthan, Odisha, Tripura, Arunachal Pradesh, Andhra Pradesh, Punjab, Mizoram, Uttarakhand, Kerala; High Income: Himachal Pradesh, Maharashtra, Tamil Nadu, Telangana, Haryana, Karnataka, Gujarat, Sikkim, Goa.
Broad classification of states based on 2023-24 per-capita nominal GSDP - Low Income: Bihar, Uttar Pradesh, Jharkhand, Manipur, Madhya Pradesh, Meghalaya, Assam, West Bengal, Chhattisgarh; Middle Income: Odisha, Nagaland, Rajasthan, Tripura, Punjab, Arunachal Pradesh, Andhra Pradesh , Mizoram, Himachal Pradesh, Uttarakhand; High Income: Kerala, Maharashtra, Gujarat, Tamil Nadu, Haryana, Karnataka, Telangana, Goa, Sikkim.

to a peak of 0.157 in 2009-10 and then falls marginally. In the middle-income group, it keeps rising to a peak of 0.149 up to 2018-19 and then starts falling. It is the lowest for high-income states and has varied between a peak of 0.041 to a trough of 0.025.

Table 8: Income-group wise Gini coefficients: real per capita GSDP

Year	Lower income states	Middle income states	High income states
1999-00	0.138	0.062	0.037
2000-01	0.11	0.066	**0.025**
2001-02	0.128	0.076	0.019
2002-03	0.12	0.078	0.033
2003-04	0.138	0.073	0.031
2004-05	0.154	0.087	0.031
2005-06	0.15	0.092	0.031
2006-07	0.136	0.093	0.033
2007-08	0.159	0.104	0.036
2008-09	0.155	0.109	0.025
2009-10	**0.157**	0.119	0.029
2010-11	0.152	0.114	0.027
2011-12	0.148	0.11	0.036
2012-13	0.15	0.112	0.03
2013-14	0.149	0.114	0.027
2014-15	0.149	0.116	0.029
2015-16	0.149	0.127	0.029
2016-17	0.142	0.135	0.026
2017-18	0.147	0.141	0.027
2018-19	0.15	**0.149**	0.032
2019-20	0.15	0.147	0.032
2020-21	0.151	0.124	**0.041**
2021-22	0.156	0.123	0.039
2022-23	0.151	0.124	0.036
2023-24	0.146	0.123	0.031

Source (basic data): MoSPI and Author's own estimates

A corresponding estimation with respect to per-capita nominal GSDP has also been undertaken since fiscal capacities relate more to nominal rather than real GSDP. The basic trends of inequality

in this estimation remain the same as that with respect to the analysis using real per capita GSDPs (Tables 9 and 10 and Chart 6).

Table 9: Interstate inequality in per-capita nominal GSDP: Gini coefficient

Year	Gini coefficient	Between group inequality	Within group contribution to inequality	% contribution of between group inequality	% contribution of within-group inequality
1999-00	0.218	0.187	0.031	86.0	14.0
2000-01	0.222	0.197	0.026	88.5	11.5
2001-02	0.226	0.197	0.029	87.0	13.0
2002-03	0.230	0.202	0.028	87.9	12.1
2003-04	0.232	0.200	0.032	86.1	13.9
2004-05	0.241	0.209	0.032	86.6	13.4
2005-06	0.255	0.225	0.030	88.1	11.9
2006-07	0.260	0.223	0.036	86.0	14.0
2007-08	0.264	0.233	0.031	88.2	11.8
2008-09	0.257	0.225	0.032	87.6	12.4
2009-10	0.258	0.226	0.031	87.8	12.2
2010-11	0.263	0.229	0.033	87.3	12.7
2011-12	0.261	0.228	0.032	87.6	12.4
2012-13	0.262	0.229	0.032	87.7	12.3
2013-14	0.262	0.229	0.033	87.4	12.6
2014-15	0.265	0.233	0.032	87.9	12.1
2015-16	0.268	0.237	0.031	88.3	11.7
2016-17	0.267	0.236	0.031	88.3	11.7
2017-18	0.269	0.237	0.032	88.2	11.8
2018-19	0.269	0.241	0.028	89.5	10.5
2019-20	0.269	0.234	0.035	87.0	13.0
2020-21	0.273	0.239	0.035	87.3	12.7
2021-22	0.274	0.241	0.033	87.9	12.1
2022-23	0.279	0.246	0.033	88.1	11.9
2023-24	0.276	0.243	0.032	88.3	11.7

Source (basic data): MoSPI and Author's own estimates

Chart 6: Inequality index for per-capita nominal GSDP (Gini coefficient): decomposition into between and within-group relative contributions

Source (basic data): MoSPI and Author's own estimates

Table 10: Income-group wise Gini coefficients: nominal per capita GSDP

Year	Lower income states	Middle income states	Higher income states
1999-00	0.138	0.042	0.046
2000-01	0.124	0.073	0.024
2001-02	0.141	0.073	0.033
2002-03	0.124	0.086	0.036
2003-04	0.151	0.088	0.037
2004-05	0.152	0.097	0.035
2005-06	0.151	0.097	0.032
2006-07	0.155	0.071	0.038
2007-08	0.159	0.103	0.040
2008-09	0.150	0.122	0.029
2009-10	0.145	0.123	0.030
2010-11	0.153	0.125	0.029
2011-12	0.148	0.110	0.036
2012-13	0.149	0.112	0.030
2013-14	0.151	0.118	0.030
2014-15	0.149	0.123	0.023
2015-16	0.138	0.143	0.022
2016-17	0.149	0.127	0.023
2017-18	0.150	0.148	0.026
2018-19	0.156	0.110	0.032
2019-20	0.158	0.133	0.030

Year	Lower income states	Middle income states	Higher income states
2020-21	0.167	0.107	0.041
2021-22	0.168	0.093	0.040
2022-23	0.163	0.107	0.041
2023-24	0.155	0.103	0.042

Source (basic data): MoSPI and Author's own estimates

For reference, it may be noted that a similar analysis was also done using the Theil coefficient of income inequality. The results are broadly the same as far as the long-term pattern over time is concerned. However, the states have been divided into separate groups using a different scheme (GS1, GS2, NEH1, NEH2). Only a summary of the results based on the Theil index is given here for per capita real GSDP. Table 11 shows the relative contribution of between and within group inequalities in the overall inequality using the alternative scheme of decomposition for states. It is seen that the between group inequality contributes to the overall inequality in the range of 72.2% to 84.5%.

Table 11: Theil inequality index with respect to real per capita GSDP and its decomposition

Years	Overall inequality	Between group inequality	Within group inequality	% contribution to overall inequality	
				Between group inequality	Within group inequality
2000-01	**0.0720**	0.0553	0.0168	76.7	23.3
2001-02	**0.0744**	0.0538	0.0207	72.2	27.8
2002-03	**0.0780**	0.0606	0.0174	77.7	22.3
2003-04	**0.0811**	0.0586	0.0225	72.2	27.8
2004-05	**0.0850**	0.0644	0.0206	75.8	24.2
2005-06	**0.0979**	0.0764	0.0216	78.0	22.0
2006-07	**0.1016**	0.0803	0.0214	79.0	21.0
2007-08	**0.1072**	0.0859	0.0214	80.1	19.9
2008-09	**0.1026**	0.0831	0.0196	80.9	19.1
2009-10	**0.1065**	0.0860	0.0206	80.7	19.3
2010-11	**0.1091**	0.0890	0.0201	81.6	18.4

Years	Overall inequality	Between group inequality	Within group inequality	% contribution to overall inequality	
				Between group inequality	Within group inequality
2011-12	**0.1115**	0.0905	0.0210	81.2	18.8
2012-13	**0.1132**	0.0923	0.0210	81.5	18.5
2013-14	**0.1172**	0.0963	0.0209	82.2	17.8
2014-15	**0.1233**	0.1014	0.0219	82.2	17.8
2015-16	**0.1277**	0.1065	0.0212	83.4	16.6
2016-17	**0.1283**	0.1067	0.0215	83.2	16.8
2017-18	**0.1329**	0.1120	0.0209	84.3	15.7
2018-19	**0.1344**	0.1135	0.0209	84.5	15.5
2019-20	**0.1368**	0.1157	0.0211	84.5	15.5
2020-21	**0.1371**	0.1152	0.0219	84.0	16.0
2021-22	**0.1382**	0.1148	0.0234	83.1	16.9
2022-23	**0.1406**	0.1173	0.0233	83.4	16.6
2023-24	**0.1401**	0.1167	0.0234	83.3	16.7

Source (basic data): MoSPI and Author's own estimates

Table 12 shows the within group inequality in per capita real GSDP and the group wise contributions using the Theil index. Looking into the individual groups, we see that in the more recent years, the Theil inequality index has increased over time for the GS1 and NEH2 groups and has remained relatively stable for the GS2 and NEH1 groups.

Table 12: Group-wise contribution to within group inequality based on Theil index: per-capita real GSDP

Years	Group-wise inequality contribution					% contribution in within-group inequality			
	GS1	GS2	NEH1	NEH2	Within group inequality	GS1	GS2	NEH1	NEH 2
2000-01	0.0117	0.0047	0.0001	0.0002	0.0168	69.6	28.3	0.7	1.4
2001-02	0.0161	0.0042	0.0001	0.0002	0.0207	78.1	20.3	0.4	1.2
2002-03	0.0124	0.0048	0.0001	0.0002	0.0174	71.0	27.5	0.5	1.0
2003-04	0.0182	0.0040	0.0001	0.0002	0.0225	80.8	17.9	0.4	0.9
2004-05	0.0162	0.0041	0.0001	0.0002	0.0206	78.8	20.0	0.3	0.9

Years	Group-wise inequality contribution					% contribution in within-group inequality			
	GS1	GS2	NEH1	NEH2	Within group inequality	GS1	GS2	NEH1	NEH 2
2005-06	0.0171	0.0042	0.0001	0.0002	0.0216	79.4	19.5	0.4	0.7
2006-07	0.0168	0.0044	0.0001	0.0002	0.0214	78.4	20.4	0.4	0.8
2007-08	0.0171	0.0040	0.0001	0.0001	0.0214	80.1	18.8	0.4	0.7
2008-09	0.0159	0.0034	0.0001	0.0001	0.0196	81.4	17.3	0.6	0.7
2009-10	0.0160	0.0041	0.0001	0.0003	0.0206	77.8	20.1	0.5	1.6
2010-11	0.0155	0.0041	0.0001	0.0003	0.0201	77.2	20.6	0.6	1.6
2011-12	0.0158	0.0046	0.0002	0.0004	0.0210	75.5	21.8	0.9	1.8
2012-13	0.0160	0.0044	0.0002	0.0004	0.0210	76.2	21.0	1.0	1.8
2013-14	0.0164	0.0039	0.0002	0.0003	0.0209	78.5	18.8	1.0	1.7
2014-15	0.0165	0.0049	0.0002	0.0002	0.0219	75.5	22.4	1.0	1.1
2015-16	0.0162	0.0047	0.0001	0.0003	0.0212	76.3	22.0	0.4	1.4
2016-17	0.0161	0.0050	0.0001	0.0003	0.0215	74.8	23.2	0.6	1.4
2017-18	0.0160	0.0044	0.0001	0.0004	0.0209	76.9	20.9	0.5	1.7
2018-19	0.0158	0.0046	0.0002	0.0003	0.0209	75.6	22.1	0.8	1.5
2019-20	0.0159	0.0048	0.0002	0.0003	0.0211	75.1	22.9	0.8	1.2
2020-21	0.0172	0.0043	0.0002	0.0003	0.0219	78.4	19.5	0.7	1.4
2021-22	0.0185	0.0044	0.0001	0.0003	0.0234	79.2	18.9	0.5	1.5
2022-23	0.0179	0.0050	0.0001	0.0004	0.0233	76.7	21.3	0.4	1.6
2023-24	0.0177	0.0052	0.0001	0.0004	0.0234	75.7	22.4	0.4	1.6

Source (basic data): MoSPI and Author's own estimates

Trends in poverty reduction and inequality in per capita consumption expenditure

Recently, NSSO based consumption expenditure data on a comparable basis for what is known as the 'thick round' of survey has become available for 2022-23 and 2023-24 after a considerable gap from 2011-12 for which data had become available earlier. Using these datasets, an estimate of poverty has been provided by a recent study by Das et al. (2025). This study has estimated poverty headcount ratios after revising the poverty line using Rangarajan methodology (2014) for 2022-23 for selected states. In this study,

sharp reduction in poverty headcount ratios has been noted between 2011-12 and 2022-23. If the state-wise annual rate of reduction in the poverty headcount ratio calculated on the basis of the 2011-12 and 2022-23 results are used to estimate the poverty headcount ratios for different states for 2023-24 to 2025-26, it is seen that this ratio falls further as detailed in Srivastava et al. (October 2025).

Using Rangarajan Committee norms, the highest rates of reductions, comparing 2011-12 to 2022-23, in terms of percentage reduction in the headcount ratio, are for Himachal Pradesh, Karnataka and Punjab for rural areas (Table 13). Similarly for urban areas, the best performing states were Tamil Nadu, Karnataka and Andhra Pradesh. Some of the large population states in India such as Uttar Pradesh, Madhya Pradesh and Bihar also did quite well in terms of lowering the poverty headcount ratio. Since these states carry a relatively larger weight in total population, we notice that with respect to the weighted average for the 19 states covered in the 2022-23 study, there was a significant decline in the poverty headcount ratios from 2011-12 to 2022-23. Thus, this weighted average fell from 31.1% to 6.7% for rural areas and from 26.9% to 6.8% for urban areas.

Table 13: Percentage of population below poverty in 2009-10, 2011-12 and 2022-23 for selected Indian states (%)

State	Rural			Urban		
	2009-10	2011-12	2022-23	2009-10	2011-12	2022-23
Andhra Pradesh	27.0	12.7	1.2	30.5	15.6	2.2
Assam	42.9	42.0	8.7	40.2	34.2	5.5
Bihar	65.1	40.1	5.9	55.0	50.8	9.1
Chhattisgarh	58.9	49.2	25.1	36.5	43.7	13.3

Gujarat	37.0	31.4	5.9	35.6	22.2	4.1
Haryana	19.2	11.0	4.1	24.8	15.3	4.3
Himachal Pradesh	11.2	11.1	0.4	22.5	8.8	2.0
Jammu & Kashmir	14.4	12.6	4.2	32.4	21.6	4.1
Jharkhand	55.3	45.9	16.6	42.1	31.3	12.6
Karnataka	24.3	19.8	0.9	26.7	25.1	3.3
Kerala	9.7	7.3	1.4	23.7	15.3	4.3
Madhya Pradesh	51.3	45.2	9.6	45.0	42.1	11.6
Maharashtra	27.6	22.5	11.3	30.3	17.0	8.6
Odisha	50.0	47.8	8.6	41.2	36.3	10.2
Punjab	14.8	7.4	0.6	28.6	17.6	2.6
Rajasthan	31.9	21.4	6.8	38.5	22.5	6.7
Tamil Nadu	25.9	24.3	2.1	29.7	20.3	1.9
Uttar Pradesh	46.3	38.1	5.7	49.6	45.7	9.9
West Bengal	37.8	30.1	7.5	36.6	29.0	12.4
Weighted average for 19 states		**31.1**	**6.7**		**26.9**	**6.8**

Source (basic data): RBI monthly bulletin, September 2025
Note: Telangana is included in Andhra Pradesh; Ladakh is included in Jammu and Kashmir

Thus, we notice that policies followed by the central and the state governments as well as the scheme of fiscal transfers from the Centre to the states together resulted into the beneficial outcome of a significant reduction in the incidence of poverty (Also see, Srivastava et al., October 2025). These beneficial outcomes are also notable in the context of a reduction in inequality in per capita nominal consumption expenditure estimated on the basis of Gini coefficient using NSSO data. Table 14 shows the opposite trends in interstate income and expenditure inequality.

Table 14: Gini coefficients for per capita real GSDP and nominal consumption expenditure

Year	Interstate inequality in per capita real GSDP at 2011-12 prices	Interstate inequality in per-capita nominal consumption expenditure	Per-capita nominal consumption expenditure based on All-India consumption expenditure fractiles	
			Rural	Urban
2011-12	0.261	0.144	0.283	0.363
2022-23	0.291	0.130	0.266	0.314
2023-24	0.289	0.128	0.237	0.284

Source (basic data): NSO and Author's own estimates

The NSSO data also highlights that what is often criticized in policy discussions as proliferation of subsidies and freebies delivered through schemes such as direct benefit transfers, PM Garib Kalyan Anna Yojana and subsidized provision for education and health services may have played some positive and tangible role in reducing expenditure inequality as well as poverty[3]. Table 15 shows the relatively higher share of a select group of food items and free cooked meals in total consumption expenditure, both for rural and urban areas, in the lower income fractiles as compared to higher income fractiles.

[3] These subsidies and freebies may be justified on these grounds as long as these are well targeted to lower income or deprived segments of the population and as long as these do not lead to violation of fiscal responsibility norms.

Table 15: Fractile-wise share in total consumption expenditure at all-India level

Fractile	2022-23				2023-24			
	Rural		Urban		Rural		Urban	
	Food 1	Free cooked meals	Food 1	Free cooked meals	Food 1	Free cooked meals	Food 1	Free cooked meals
0-5%	12.3	2.1	9.0	0.9	12.4	2.1	8.9	1.1
5-10%	11.2	2.0	8.0	0.8	11.3	1.8	7.9	0.8
10-20%	10.5	1.8	7.5	0.8	10.3	1.7	7.3	0.7
20-30%	10.0	1.8	6.9	0.7	9.6	1.6	6.8	0.5
30-40%	9.5	1.6	6.4	0.6	9.1	1.4	6.3	0.6
40-50%	8.9	1.5	6.1	0.5	8.6	1.4	6.0	0.5
50-60%	8.4	1.4	5.6	0.4	8.0	1.3	5.6	0.5
60-70%	7.8	1.4	5.3	0.4	7.5	1.1	5.3	0.3
70-80%	7.1	1.3	4.8	0.5	7.0	1.0	4.8	0.3
80-90%	6.4	1.0	4.2	0.4	6.4	0.7	4.2	0.3
90-95%	5.6	1.0	3.3	0.4	5.7	0.5	3.5	0.3
95-100%	4.0	0.8	2.2	0.5	4.5	0.5	2.2	0.3

Source: NSSO HCE 2022-23 and 2024-25
Notes: Food 1 comprises Cereal, Gram, Cereal substitutes, Pulses & pulse products, Sugar and Salt
Free cooked meals include cooked meals recd. free in workplace and as assistance

6. Drivers of growing inequality in per-capita GSDP

An important feature of a federal fiscal arrangement is the presence of a fiscally unfettered common market covering the entire country. This facilitates a smooth movement of financial (saving and capital) and human resources. The trend of growing interstate income inequality appears to be linked to a high concentration of capital stock in and investment flows to a limited number of states.

There is a need to recognize that inter state differences in per capita GSDP or per capita fiscal capacity is determined largely by market forces that drive investment activities in different states. Here, rather than revenue expenditure undertaken by states, it is the capital expenditure which is more important. Further, instead of government capital expenditure, it is the allocation of private capital expenditure which accumulates into capital stock, that is even more critical. In fact, movement of investible resources through the market serves the purpose of efficiency in a federal setup which ensures a common market with barrier-free movement of financial resources including savings across states. There is limited availability of data for state-level investment or capital stock profiles. However, we have some data with respect to inter-state profile of productive capital stock[4] for the industrial sector. Market forces induce this capital stock to get concentrated in a limited number of states resulting in these states leading with respect to per capita GSDP. Table 16 shows the group-wise contribution to the concentration index as measured in terms of HHI. There has been, historically, a high concentration of productive capital stock in the GS2 states as compared to the GS1 states. There is a marginal downward movement in the contribution of the GS2 states to the overall concentration ratio and an upward movement for the GS1 states. However, the difference in the contributions of the two groups is extremely large, and this small change may not have a material impact.

[4] Productive capital is the sum of fixed capital and working capital (https://mospi.gov.in/sites/default/files/publication_reports/ASI/ASI_Manual_2021-22.pdf)

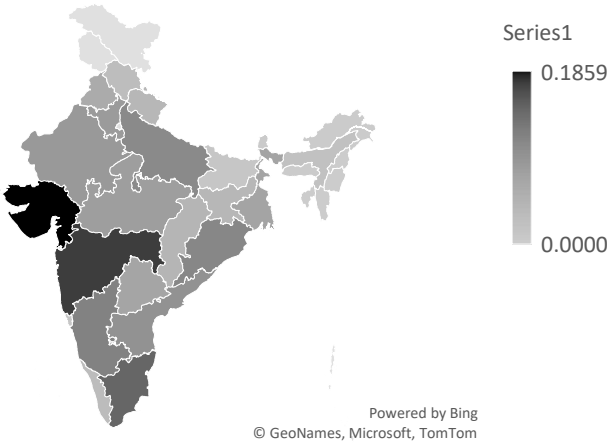
Table 16: Group-wise contribution (%) to concentration of productive capital stock

State group	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
GS1	14.3	18.0	15.7	17.1	15.8	18.1	17.1	14.9	15.0	14.8	16.4	16.3
GS2	84.2	80.6	83.2	81.7	83.1	81.1	82.0	84.3	84.3	84.6	82.9	82.9
NEH1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NEH2	1.4	1.3	1.1	1.1	1.0	0.7	0.8	0.7	0.6	0.6	0.6	0.7

Source (basic data): RBI, MoSPI and Author's own estimates

Chart 7 shows the state-wise profile of shares of individual states in the all-state capital stock. States with a larger share are represented by a darker shade. Gujarat, Maharashtra and the southern states are clearly depicted to have higher shares. Uttar Pradesh also has a relatively larger share as compared to some of its neighbouring states. This may reflect some changes in the recent years as the data captured pertains to the average for the period 2020-21 to 2022-23.

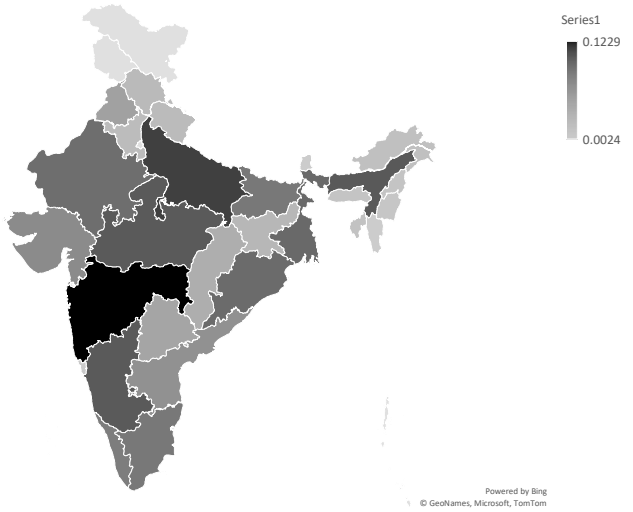
Chart 7: State wise shares in all-state productive capital stock (nominal): (average 2020-21 to 2022-23)



Source (basic data): RBI Handbook of State Statistics

Some other indicators that contribute to attracting capital and driving growth across states may also be looked at. For example, infrastructure plays a key role in attracting investible resources. Chart 8 shows the relative shares of different states in all-state road length. Data pertains to the average for the period 2016-17 to 2018-19. This is more evenly distributed as compared to the distribution of productive capital stock. States like Maharashtra, Uttar Pradesh, Rajasthan, Madhya Pradesh, Karnataka, Andhra Pradesh and Assam in the north-east have relatively larger shares in the all-state road length. Here, it is the state level capital expenditure that might have played an important role apart from the state allocation of national highways.

Chart 8: State wise shares in all-state road length: (average 2016-17 to 2018-19)



Source (basic data): RBI Handbook of State Statistics

Table 17 gives the state group-wise contributions to the concentration indices estimated with respect to various infrastructure indicators. Although the magnitudes of these contributions differ with respect to different indicators, the following features are noteworthy.

1. In terms of installed power capacity and length of state highways, there is a substantial concentration for the GS2 group of states as compared to the GS1 group.
2. With respect to road length, the concentration is broadly comparable for the GS1 and GS2 groups. Among the NEH states, there is a much larger concentration in the NEH1 group.

3. In terms of national highways, the profile over time shows some interesting features. Initially, the GS1 group had a tangibly higher contribution to the concentration index. However, this has been reversed in recent years in favour of concentration in the GS2 group. For the NEH states, there is broad comparability between the NEH1 and NEH2 groups.
4. In terms of railway route length, there is a relatively higher concentration for the GS1 group as reflected by its contribution to the overall index. This reflects the relatively large size of population and available area to be served rather than the relatively large size of income in terms of the demand for travel by railways. This also reflects inter-state movement of freight.
5. With respect to connectivity through telecommunications for which only recent data are available, we notice that for subscribers through wireless and wired services and only through wireless services, the contribution to the index is higher for the GS1 group reflecting again the larger size of population in this group of states vis-a-vis. the GS2 group of states.

Table 17: Group-wise contribution (%) to infrastructure concentration

State group	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24
Installed power capacity													
GS1	19.7	19.5	21.7	23.9	26.4	25.3	25.0	25.9	26.8	27.0	29.4	30.3	30.3
GS2	79.5	79.8	77.7	75.4	73.1	74.3	74.6	73.7	72.8	72.6	70.2	69.4	69.3
NEH 1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NEH 2	0.8	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.3	0.3
Road length													
GS1	45.7	41.3	40.8	40.7	41.0	41.5	44.1	41.7	NA	NA	NA	NA	NA
GS2	45.4	51.3	50.7	50.4	50.3	49.9	47.8	47.8	NA	NA	NA	NA	NA
NEH 1	8.4	6.9	7.9	8.3	8.1	7.9	7.5	9.7	NA	NA	NA	NA	NA
NEH 2	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.8	NA	NA	NA	NA	NA
Length of state highways													
GS1	14.8	12.6	13.3	12.5	16.2	16.2	15.3	18.9	NA	NA	NA	NA	NA
GS2	83.9	86.4	85.7	86.6	82.7	82.8	83.7	79.9	NA	NA	NA	NA	NA
NEH 1	0.5	0.4	0.5	0.3	0.3	0.3	0.3	0.4	NA	NA	NA	NA	NA
NEH 2	0.7	0.6	0.6	0.6	0.8	0.7	0.7	0.8	NA	NA	NA	NA	NA
Length of national highways													
GS1	58.8	58.6	50.6	50.4	48.7	38.1	38.1	41.6	NA	40.4	39.8	39.0	39.1
GS2	33.6	34.3	41.6	40.3	42.1	56.2	56.2	53.8	NA	55.0	55.6	55.4	55.3
NEH 1	3.9	3.7	4.1	4.5	4.4	2.8	2.8	2.3	NA	2.2	2.2	2.1	2.1
NEH 2	3.7	3.5	3.7	4.9	4.8	2.9	2.9	2.4	NA	2.4	2.5	3.5	3.5
Railway route length (km)													
GS1	57.9	58.3	57.9	60.4	60.6	61.0	60.8	63.2	59.6	59.8	59.8	60.4	60.6
GS2	40.1	39.6	40.1	37.5	37.3	37.0	37.2	34.9	38.3	38.0	38.1	37.4	37.3
NEH 1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.8	2.1	2.0	2.0	2.1	2.1
NEH 2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Total Subscribers (wireless + wired)													
GS1	NA	NA	NA	NA	NA	NA	51.1	51.1	49.7	52.2	52.7	53.2	NA
GS2	NA	NA	NA	NA	NA	NA	48.0	47.9	49.3	46.7	46.3	45.8	NA
NEH 1	NA	NA	NA	NA	NA	NA	0.7	0.6	0.7	0.7	0.7	0.8	NA
NEH 2	NA	NA	NA	NA	NA	NA	0.3	0.3	0.4	0.3	0.3	0.3	NA
Wireless subscribers													
GS1	NA	NA	NA	NA	NA	NA	52.1	52.2	50.7	53.2	53.7	54.3	NA
GS2	NA	NA	NA	NA	NA	NA	46.9	46.9	48.2	45.7	45.2	44.7	NA
NEH 1	NA	NA	NA	NA	NA	NA	0.7	0.6	0.7	0.7	0.7	0.8	NA
NEH 2	NA	NA	NA	NA	NA	NA	0.3	0.3	0.4	0.3	0.3	0.3	NA

Source (basic data): RBI, EPWRF and Author's own estimates

7. Conclusions and policy suggestions

The coexistence of equalization and inequality in India is worth exploring. We have explored possible avenues of intervention in the opposite trends of equalization in certain economic and fiscal aggregates vis-à-vis. growing interstate inequality in other critical parameters. We note that policy options are limited and there is a need to work out a suitable balance between pursuit of efficiency and growth vis-à-vis. pursuit of reduction in interstate inequality as India marches towards a Viksit status.

In this paper, we have looked at the profiles of interstate inequality in a number of economic and fiscal aggregates covering per-capita primary revenue expenditure excluding pensions, per capita education and health expenditures along with selected outcome variables in these sectors. We have also looked at interstate inequality in per capita real and nominal GSDP as well as in per capita consumption expenditures. We have used Gini coefficient of income/expenditure inequality and Theil coefficient of inequality. These profiles have been juxtaposed against a set of cross-state

concentration ratios to explore the reasons as to why income inequalities have increased over time in India.

A salient finding is that the availability of resources to the states through a scheme of fiscal transfers largely guided by the equalization principle may have resulted, in combination with other policies at the central and state levels, to a profile of decreasing inequality in per-capita primary revenue expenditure excluding pensions. For important services such as education and health, there is a trend towards reducing inequality in a number of outcome indicators.

Equalization transfers imply redistributive transfers. Sometimes, the higher fiscal capacity states argue that such a redistribution is not desirable because states like Bihar and Uttar Pradesh have not improved their position in terms of fiscal capacity. However, it may be noted that it is not the task of the FC to address inequalities in per-capita incomes. When the Commission designs a scheme of fiscal transfers, it considers the distribution of per-capita GSDPs/fiscal capacities as given and then it tries to ensure that per-capita primary revenue expenditures excluding pensions across states become comparable subject to cost differentials and comparability of revenue effort. In fact, when they ensure equality in per-capita education or health expenditures, it only ensures that human resources become more mobile across states and as skilled human resources migrate to the already high per-capita GSDP states where capital stock has already been concentrated, it only adds to trend of growing inequality in fiscal capacity or per-capita GSDP.

We also find that it is the market forces that, in their pursuit for efficiency, allocate available investible resources to states that

already have relatively higher per capita incomes where they may enjoy higher returns. Human resources also gravitate towards these states. There are very few policy instruments which can guide some of the growth drivers towards the existing lower income states. In fact, the institutions of FC and Planning Commission were put in place so that while one agency may look after the equality of publicly provided public and merit services, the other can cater to inter-state growth and development profiles. However, as shown earlier, even when the Planning Commission existed, inequalities in per capita real and nominal GSDPs continued to increase. The NITI Ayog that took the place of the erstwhile Planning Commission does not have any resource allocation powers. It is only the central government that may examine more critically, the impact of the inter-state allocation of their own capital expenditures and that of the location of central public sector enterprises (CPSEs).

Given the continuing trends in inequality in per capita incomes/fiscal capacities of the states, it is worthwhile recognizing that economic policy focused on reducing poverty and expenditure inequality for the lower income groups on a priority basis has shown satisfactory outcomes. Equalization transfers also served a positive role in ensuring progressive equalization of state level provision of education and health services. These inequality reduction outcomes in terms of selected dimensions have been achieved while still maintaining a satisfactory growth profiles at state and national levels by paying attention to efficiency-enhancing choices and preserving a country-wide market. This is evidenced particularly since 2001-02 which was otherwise punctuated by global crises such as in 2008-09 and 2020-21 (See, Srivastava et al., 2025 c, for details) where India has been able to show a robust growth performance.

Further research needs to be done as to how to achieve (1) equal outcomes in health and education across states eliminating any remaining inequality or keeping it below a defined threshold say 3%, (2) how and when the trend of growing interstate income inequality can be reversed, and (3) exploring intra-state inequality profiles at the district level and (4) what is the appropriate balance between growth and inequality reduction measured in terms of per capita incomes particularly interstate inequality in fiscal capacities for a country aiming at a *Viksit status.*

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Appendix 1: Classification of states according to groups: Theil inequality index calculations

Table A2.1: Classification of states according to groups: GS1, GS2, NEH1 and NEH2

Group name	State Name	State symbol	Per-capita GSDP - nominal (Avg. 2021-22 to 2023-24)
General States			
GS1	Bihar	BH	59,405
GS1	Uttar Pradesh	UP	68,264
GS1	Jharkhand	JH	74,091
GS1	Madhya Pradesh	MP	1,00,358
GS1	Chhattisgarh	CH	1,07,045
GS1	West Bengal	WB	1,08,698
GS1	Odisha	OD	1,16,112
GS1	Rajasthan	RJ	1,18,600
GS2	Punjab	PB	1,46,388
GS2	Andhra Pradesh	AP	1,71,962
GS2	Kerala	KL	2,01,443
GS2	Maharashtra	MH	2,02,658
GS2	Gujarat	GJ	2,15,954
GS2	Tamil Nadu	TN	2,21,758
GS2	Haryana	HR	2,30,595
GS2	Karnataka	KA	2,34,774
GS2	Telangana	TS	2,46,209
GS2	Goa	GA	3,86,650
Weighted average			
	GS1 group		1,24,837
	GS2 group		3,14,882
Northeastern and Himalayan States			
NEH1	Manipur	MN	86,523

Group name	State Name	State symbol	Per-capita GSDP - nominal (Avg. 2021-22 to 2023-24)
NEH1	Assam	AS	97,807
NEH1	Meghalaya	ML	98,244
NEH1	Nagaland	NL	1,15,172
NEH1	Tripura	TR	1,24,553
NEH2	Arunachal Pradesh	AR	1,56,695
NEH2	Mizoram	MZ	1,73,076
NEH2	Himachal Pradesh	HP	1,78,073
NEH2	Uttarakhand	UK	1,85,984
NEH2	Sikkim	SK	4,43,109
Weighted average			
	NEH1 group		1,50,227
	NEH2 group		2,82,689
	All states		**2,03,501**

Source (basic data): MoSPI